APR 3 1923

Railway Age

FIRST HALF OF 1923—No. 17 NEW YORK—MARCH 31, 1923—CHICAGO SIXTY-EIGHTH YEAR

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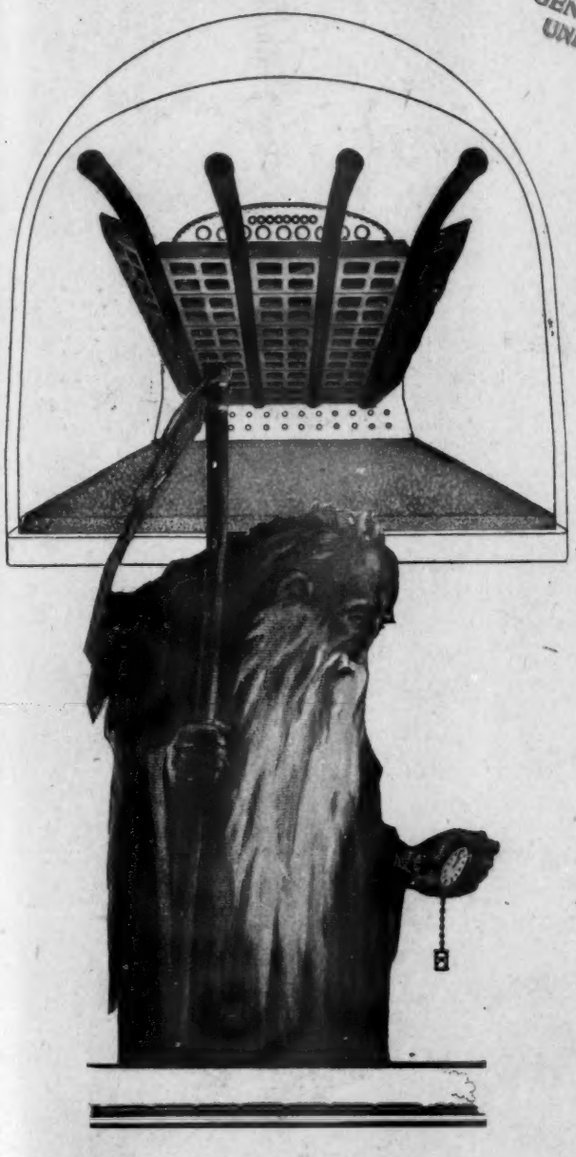

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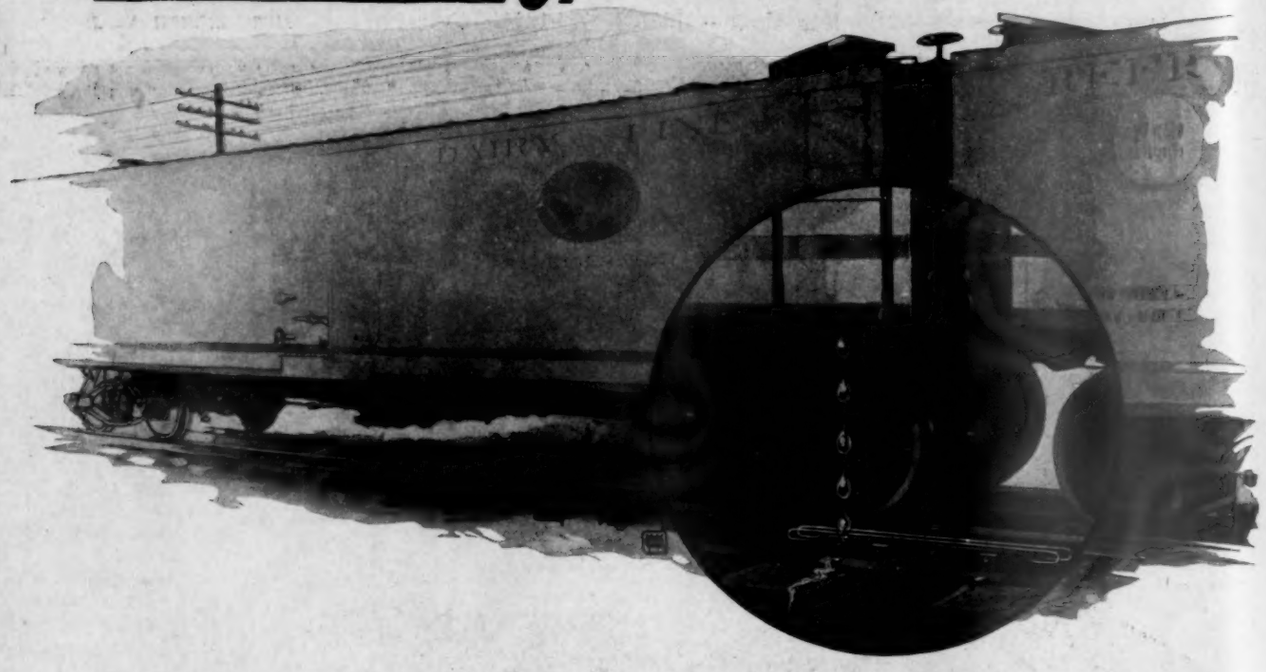
The drip that corrodes ordinary bond wire



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ARMCO INGOT IRON

PAGE-ARMCO BOND WIRE

Volume 74 Number 17

Published weekly by Simmons-Boardman Pub. Co., Woolworth Bldg., New York, N. Y. Subscription Price U. S., Canada and Mexico, $6.00; foreign countries (excepting daily editions), $8.00, and $10.00 a year including all dailies; single copies, 25c. Entered as second-class matter January 30, 1918, at the post office at New York, N. Y., under the act of March 3, 1879.

EDITORIAL
Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

The Decline of Railroad Mileage

THE DECISION of the owners of the Chicago, Peoria & St. Louis that it would be more profitable for them to tear their railway up than to continue to own and operate it has attracted nation-wide attention, but it is not an exceptional case. There never was a year from the time the first rail was laid until 1915 that the mileage of railways in this country did not increase. There has never been a year since then that it has not decreased. Complete statistics for the year 1922 are not available, but the statistics of the Interstate Commerce Commission showing the increase in railway mileage which occurred in the six years ending with 1915, and the decrease in mileage which occurred in the six years ending with 1921, afford opportunity for a study in contrasts and reflection upon the reasons for them.

The increases and decreases of mileage in these years were as follows:

	Miles
1910—increase	5,908
1911— "	4,740
1912— "	3,301
1913— "	3,003
1914— "	2,511
1915— "	831
Total 6 years increase	20,294
1916—decrease	214
1917— "	411
1918— "	96
1919— "	377
1920— "	307
1921— "	801
Total 6 years decrease	2,206

It will be noted that the statistics given for the six years ending 1921 are *net decreases*—in other words, represent the extent to which the mileage actually torn up exceeded the new mileage built. It will also be noted that the decline of the railroad mileage in the country has been going on at an accelerating rate, the decline in 1921 being almost twice as great as in any previous year.

To what is it due that the railway mileage of the country continued to increase until 1915, while since then it has actually been declining? There can be no question whatever in the mind of any intelligent and unprejudiced person as to the correct answer. The revolution in the railroad industry which these figures bespeak has been due to restrictive, hostile and stupid regulation. It will be noted that even as recently as 1910 the mileage increased almost 6,000 miles. In that year the Mann-Elkins law empowering the Interstate Commerce Commission to prevent advances in railway rates was passed. In 1911 the commission in the exercise of this new authority refused to authorize the first general advance in rates which the railways asked. In every year of the next four years the increase in total railroad mileage declined, until finally beginning in 1916 reductions of mileage exceeded increases and these reductions have been going on ever since. The reason why they have been going on, and the only reason, is that the railways have been so regulated that the net return earned by them has steadily declined. There were increases in it in the years 1916 and 1917, but these did not last long enough to have any appreciable effect upon railroad development.

The Chicago, Peoria & St. Louis has 247 miles of line which serve a rich agricultural territory. The people of that territory have protested violently against its being torn up, but no railroad or any other business concern can continue to operate forever at a loss. Its patrons could far better afford to pay it rates high enough to enable it to prosper than to have it torn up. But this rational and obvious method of keeping it in existence seems to be almost the only one that has not been suggested. The Missouri & North Arkansas Railway, which has 365 miles of line, recently has been struggling desperately to maintain its life in spite of the destructive attacks of striking employees and unremunerative rates. Likewise the Kansas City, Mexico & Orient, which has 466 miles of line, recently has been threatening to give up the ghost, and numerous government doctors, federal and state, have been rushing in to give it oxygen, in disregard of the fact that what it needs to keep it permanently alive is not oxygen but food in the form of remunerative rates. There are many other railways in the country, some much larger than any of these, the results of whose operations show that it is only a matter of time until they will have to be torn up unless a different policy of government regulation is adopted.

The political and economic doctors are offering many prescriptions to keep these railways alive. The most popular at the present time is their consolidation with the so-called "strong" railways. The average return earned by all the railways of the United States on their valuation in 1921 was 3⅓ per cent and in 1922, 4.14 per cent. Therefore, if all the railways in those years had been united into, say, 20 large systems of equal earning capacity the net return earned by each of these large systems would have been about 3.75 per cent. The principal result of wholesale consolidation, as long as the railways are regulated as they have been for over 10 years, would be to create many big systems none of which would be prosperous enough to much more than pay the interest on their bonds, instead of having some railways which are relatively prosperous and many others which are bankrupt or soon will be.

The policy of government regulation we have had for 10 years surely has been bad enough, since it has changed the railway system of this country from one that was prospering

and developing into one the mileage of which is constantly declining with increasing rapidity. Political corn doctors such as Brookhart, LaFollette, and Capper propose to solve the railroad problem by adopting a more restrictive and drastic policy of regulation. If men such as they continue to dominate our policy of regulation we shall soon reach the time when our railroad mileage will decline as rapidly as it formerly increased. It has now declined until it is back to where it was in 1913, 10 years ago, and if it declines at the accelerated speed that their policies would cause it to, this country, having in three-quarters of a century built up its great railway system, may succeed in the next three-quarters of a century in wiping it out entirely. This is the only country in the world except Russia where men who are trying to destroy the transportation system of the country are called "progressives."

Distinctiveness and Neatness in Equipment

In a letter to the editor, published elsewhere in this issue, Edward Hungerford has stated clearly the case for distinctiveness and neatness in equipment as a builder of morale and business. Probably few of our readers will agree with him—otherwise passenger equipment on the railroads of the country would not be what it is, i.e., with the exception of a few roads, uniformly drab in appearance. Nevertheless Mr. Hungerford's argument is forceful and thought-provoking. "If individuality is a good thing for a merchant, why is it not a good thing for the railroads?" he asks. There must be some answer to this question. Only in recent years unconventional colors for some passenger equipment were abandoned by two or three roads. Some saving in the cost of cleaning is undoubtedly effected by the adoption of a uniform dull color which does not show dirt. The extent of this saving, however, and whether it is a wise one, is another matter and one on which many of our readers are, doubtless, well informed and able to point out wherein Mr. Hungerford's argument is correct or fallacious.

A Constructive Transportation Program

Three special committees of the Chamber of Commerce of the United States are actively at work studying the transportation facilities of the country as a preliminary to the adoption by the Chamber of a specific constructive transportation program embracing railroads, highways and waterways. The committees which have already held meetings are those on motor transport, railroad consolidation and co-ordination of railways and waterways. The chairmen of these committees in the order named are A. H. Swayne, vice-president of the General Motors Corporation; Carl R. Gray, president of the Union Pacific, and W. L. Clause, chairman of the board of directors of the Pittsburgh Plate Glass Company. There are two other special committees which are yet to hold meetings, viz., that on governmental relation to transportation, of which George A. Post is chairman, and that on the readjustment of relative freight rate schedules, of which Frederic A. Delano, formerly a member of the Federal Reserve Board, is chairman. Under the plans of the Chamber these five special committees will report to a general committee which is yet to be formed. A progress report will be made at the annual meeting of the Chamber in New York on May 7-10 but it is not expected that final recommendations will be ready for presentation at that time. If the Chamber of Commerce can develop a sound transportation policy to which the business interests of the country will give their hearty support and if it can so agitate the question that the intelligent interest of the public will be aroused, the result may be the thwarting of the definite plans advanced by the radical members of the next Congress. The Chamber has a big opportunity for service to the country.

Development of Autogenous Welding

The need for close co-operation between the makers and users of welded equipment was pointed out at a recent meeting of the American Welding Society. A member of the boiler code committee of the American Society of Mechanical Engineers explained the reasons for the rigid specifications applied to the welding of boilers and of unfired pressure vessels. Recent tests of pressure vessels prove that many of the specifications would be unnecessarily rigid if all the welding were done as it ought to be. Uniform results with autogenous welding would mean a desirable extension of the use of autogenous welding both for manufacturing and repair work. Uniform results, however, can only be obtained by the proper training of operators and a better understanding of the process by everyone concerned. In 1922 the American Welding Society collaborated with the American Electric Railway Association on the welding of rail joints for street railways with gratifying results. This year the Society is prepared to handle steam railroad problems and will welcome questions and suggestions; this is an opportunity which should not be overlooked.

Schedules for All Freight Trains

Passenger service must be expeditious and the publishing of the time table and strict adherence to it are the means by which the required celerity of the service are secured. The provision of time table schedules for all freight trains would probably effect a similar speeding up of this service. Unfortunately, however, it is not practicable to handle freight business in this manner. Its volume varies from day to day and it does not pay to run trains simply because they are scheduled, regardless of whether tonnage is available or not. Moreover, the advisability of filling the time table with many schedules which would have to be cancelled by train orders might well be questioned. In addition, the many delays which freight trains meet with might, if all trains were scheduled, make necessary for efficient operation the issuance of more train orders than is now the case, with most freight trains running as extras. These are the difficulties in the way of time table schedules for all freight trains. They can be overcome by the simple expedient of providing schedules for all freight trains *but keeping them out of the operating time table.* Such schedules can be prepared by the operating officers in sufficient number to provide for a maximum number of trains. Copies can be supplied to yard forces, train crews, dispatchers, operators, enginehouse foremen and all others interested in train movement. Any schedule may be dropped without the issuance of a train order if tonnage, power or crews are not available; but no train will be run except on one of the schedules. Enginehouse foremen then will know just when they will be called upon to have power ready; yard forces will know when trains must be ready to leave; switchmen and maintenance men will know when they cannot block the main line; train crews will know just what is expected of them in getting over the road and dispatchers can arrange most meeting and passing points almost automatically. In short, the non-time table scheduling of all freight trains has all the advantages and none of the disadvantages of hundred per cent time table operation.

This method of operation is known as the "peg system" and it has been in successful operation for six years on the Buffalo, Rochester & Pittsburgh where it has saved from one to two hours per train in moving over divisions approximately 100 miles in length.

Eye Accidents In Blacksmith Shops

Eye accidents are more frequent than almost any others in railroad shops, and the blacksmith department is responsible for at least its full quota owing to flying scale, hot steel chips and emery dust. Drop hammers and forging machines add to the hazards, and hot saws send a shower of sparks in all directions. The common practice of shop men is to use goggles only when compelled to and a forging machine operator, for example, often depends on turning his head when the ram strikes the hot metal. The trouble is that sometimes he does not turn it quickly enough; an eye is lost, or its sight impaired. This is more than a matter for safety first committee action. It is strictly up to the shop management, which must realize the resultant expense in doctors' bills, damage suits, and loss of service. Shop production also is reduced owing to inability of men to see clearly and watch their work all the time without some reliable protection, and this statement applies to other departments as well as the blacksmith shop. Shopmen have a natural tendency to take a chance and raise many objections to the use of goggles, saying that they are heavy, hot, get foggy and hinder production. Goggles have to be heavy to provide the necessary safety feature and the men in one shop all ordered heavy frames when they saw the goggles of a companion stop a flying nut with but a slight resultant cut on his eyebrow. Experience shows that goggles enable men to work about the furnaces with greater comfort, especially if a sweat pad is used across the forehead to keep perspiration out of the eyes. Regarding production, one blacksmith testified that he never saw a forging made until he began wearing goggles. Better and faster work can be done without the continual guarding against injury to the eyes. Men cannot be induced to wear goggles by coaxing, pleading, or arguing, but when the management becomes convinced of the value and necessity of goggles and sees that regulations regarding their use are enforced, eye accidents will no longer head the list of injuries, eyes will be saved and production increased.

Locomotive Terminal Inadequacy

Railroads have so repeatedly been blamed for the existence of what is known as a car shortage, that to many the remedy appears to be the immediate purchase of more cars. That there is a pressing need for additional rolling stock—both cars and locomotives—and that railroad managers are awake to this need is evidenced by the large orders for equipment which have been placed during the past few months. In some places, however, there may be even a greater need for increased yard capacity than for additional cars; in many places the really critical shortage is in adequate locomotive terminals and facilities for promptly caring for existing motive power. The rapid increase in the size of locomotives and the addition of important accessories have thrown an added burden on the roundhouse. Moreover, there has been a steadily increasing tendency to insist on more and heavier running repairs being done at terminals, partly because of the fact that sufficient repair shop space or equipment have not been provided to care for increasing demands, and partly because it is economically advantageous to prolong the period between shopping as much as possible. The demand that a larger amount of repair work be done at the roundhouse is a proper one, but unfortunately here, as elsewhere, far too little has been provided in the direction of increased facilities and equipment to meet changing conditions. While the situation is bad, the problem is a complicated one and demands different solutions at different terminals. It is a hopeful sign that the situation is becoming more clearly recognized and is receiving increasing study. In this, as in other matters, the first need is for an exact knowledge of the conditions and the results caused by such conditions. Steps can then be taken intelligently to improve matters. While attention should be given to the design of approaches, coal chutes, ash pits and turntables, the inside of the house and the equipment are today of far more relative importance than was the case only a few years ago. Mechanical men who are called upon to operate locomotive terminals should be given a larger voice in the decision of such important matters in the future than has ofttimes been the case in the past.

Possible Economy in New Shop Methods

Only an extremely small percentage of the devices recorded annually at the U. S. patent office ever prove practical, and from long experience railroad shop managements know that most proposed new shop methods, kinks and machines will not stand the test of time. There is a distinct danger, however, that the few which are real time and labor-savers will be overlooked. In fact, railroad shops, particularly those of medium and small size, are frequently operated on too conservative a basis as regards the introduction of new practices, and mechanical department officers can well give this subject careful attention in view of its direct effect upon repair costs. Even a casual inspection of many railroad shops will prove that new methods of demonstrated value are being overlooked or disregarded, and it cannot be said that the reason is always lack of funds to secure the necessary new equipment. A concrete illustration is afforded by the slowness with which grinding methods have been adopted in railroad shops. Grinding was shown to be the only efficient, economical method of finishing piston rods ten, or possibly more, years ago. Why should piston rods still be turned and rolled in some shops? How account for the delay in adopting journal grinding? Worn air compressor cylinders can be trued by grinding with a saving in time and material and providing a far better job. To be specific, one 9½-in. by 12-in. cylinder can be trued on a $3,000 internal grinder in 53 minutes, floor to floor. If trued as is ordinarily done by boring, one hour and forty minutes is required, floor to floor, on a boring machine costing about $8,000. These actual test figures were obtained on a large southern road. Other roads are making similar studies, recognizing the relation between modern, up-to-date shop practices of all kinds and reduced repair costs.

Labor Saving Equipment and Its Use

A saying quite applicable to the practice of some roads in regard to the utilization of their labor saving equipment in the maintenance of way department is, "What is everybody's business is nobody's business." Good, high-grade economy-effecting machinery is often allowed to remain idle in section houses and along the right-of-way, because of the lack of a systematic check on the regularity of its use, its productive results and its condition. No piece of equipment can produce results unless it is used intelligently and the intelligent use of any machinery can never be brought about unless there is a definitely placed responsibility for its condition and the methods of its operation. With all due credit to section and other track foremen, they are not, with occasional exceptions,

good mechanics. In fact, few of them know anything whatsoever regarding the devices they are frequently called upon to use regularly and often to maintain. It is distinctly necessary on many roads today that an organization be developed within the maintenance of way department for the sole purpose of maintaining labor saving equipment. On small roads it may consist of only one or two men, but whatever its size, it should be so organized as to insure adequate and regular inspection of equipment, instruction of the men in its operation, and keeping it in repair. Although the first step in prosecuting maintenance work economically is the acquisition of an adequate supply of labor saving equipment, the second is the development of a positive insurance through proper organization that such equipment will be used to maximum advantage. Actually, the two go hand-in-hand and no lasting benefits will accrue unless it is so handled.

Earnings in February

Railway earnings statements thus far made public do not show for February as good net operating income as in January. This is to have been expected for the simple reason that February is a shorter month and for many roads it is a period of relatively greater operating difficulties due to weather conditions. Another point is the fact that earnings in February last year were expanded, as compared with January last year, by heavy movements of coal, that commodity having begun to move in volume after an extended dull period, in anticipation of the coal strike which began on April 1. Under the conditions, as a whole, the February earnings thus far—with one or two notable exceptions—continue the progress made in January in fairly satisfactory manner. Figures for a number of typical roads follow:

NET RAILWAY OPERATING INCOME

Road	Feb., 1923	Inc. or dec. compared with last year	Two months	Inc. or dec. compared with last year
Baltimore & Ohio...	$2,522,158	$451,033	$6,131,652	$2,537,422
Boston & Maine.....	def. 1,281,805	—1,642,562	def. 2,656,554	—3,015,138
Gulf State Lines.....	209,817	3,125	456,136	56,551
Illinois Central.....	2,306,061	69,296	5,185,594	1,372,197
Lehigh Valley.....	def. 953,420	—1,535,888	def. 1,882,453	—2,816,402
New York, New Haven & Hartford	def. 329,693	—1,235,901	def. 1,110,280	—2,909,053
St. Louis-San Francisco	1,228,269	4,130	2,790,279	364,981
Southern Pacific.....	1,670,013	351,664	4,509,758	1,752,091
Union Pacific.....	1,914,779	80,050	4,030,980	862,261

A Good Annual Report

THE *Railway Age* has had much to say of late about the desirability of better and more informative railway annual reports. It is not out of place, therefore, when an annual report is received that incorporates many of the suggestions which have been made and some others in addition, that attention should be directed to it. The report in mind is that published last week by the Boston & Maine. In discussing it, the *Railway Age* does not feel that it can claim any of the credit for the fact that the report is what we should term a good one; this is not the first time the Boston & Maine has issued a report as informative as the present one. The principal feature of excellence in the report is the section containing the president's remarks. The section has a number of interesting features. One is its completeness and the manner in which it discusses all the important angles of the railway situation, especially in the light of the Boston & Maine's own problems, which factor makes the discussion of more practical interest to the stockholders to whom it is addressed.

The subjects covered include the regular features, such as the situation with respect to rates, expenses, finances, etc. In addition, there appear sections dealing with matters of such special interest to Boston & Maine stockholders as the New England divisions case, the Boston port differential case, taxation, valuation, etc. Some especially interesting details are given concerning the question of fuel supply, the matter of motor truck competition, the possibility of using rail motor cars on branch lines, and the question of possible abandonment of non-paying branch lines.

Of special interest is the fact that the annual report is one of the first to contain an official statement of the management as to its attitude towards railroad consolidations, a question which, incidentally, most of the railroads have been very chary about discussing in quite this way. Finally, attention should be drawn to the very candid way in which the railroad admits the difficulties visited upon it by the shopmen's strike. This will be instanced by the following excerpt, worth quoting at some length:

> "Likewise the shopmen's strike, with 90 per cent of the mechanical forces involved, not only increased the operating expenses of the department directly affected in the strike, but also transportation and other operating costs.
>
> "It is difficult to estimate accurately the indirect effect on the net revenues from these two causes, the coal strike and the shopmen's strike, but it is very substantial, running into several millions. Aside from the loss of revenues, and the additional cost of the fuel, there was a direct and substantial increase in overtime payments to road and yard crews, due to the quality of the substitute coal not meeting the requirements of the locomotives, and resulting in engine failures and delays. The shopmen's strike likewise had a similar effect on overtime payments because of engine failure directly attributable to that cause."

The *Railway Age* has no desire to offer the Boston & Maine annual report as an ideal. We do not believe that the report of any one road can be regarded as an ideal for all other roads to follow. Each road has its own problems and these are sufficiently different to merit differing treatment. The Boston & Maine report, however, is an unusual one and can be used as a very fair guide of what may be generally considered to represent excellence. It is worth noting, in passing, that the road is issuing the president's remarks in booklet form without the statistical tables—a desirable way of facilitating a wider circulation of the story the report contains.

New Books

Metals and Their Alloys. By Charles Vickers, 800 pages, 6 in. by 9 in., 110 illustrations, bound in cloth. Published by Henry Carey Baird & Co., New York.

Although partly based on Metallic Alloys by William T. Brannt, the revision has been so thorough and so much new material has been included that this volume is practically a new work. It is a comprehensive and practical reference book on the subject of metals and their alloys, and will be of special interest to the engineer, designer, metallurgist, chemist, and foundryman. It deals with the origin of metals, their combination into various alloys and their physical properties, such as strength, ductility, hardness, bearing properties, lightness and resistance to acids. Modern American foundry practices are well described, although the book is not essentially one on foundry work. Information in regard to smelting and refining is somewhat brief and includes only such facts as the user of alloys would be apt to desire. Considerable space is devoted to brasses and bronzes—copper, tin, lead, zinc, aluminum, manganese and other alloys. There are chapters on alloys for steam metals, bearing metals, solders and fusible alloys. Iron and steel alloys are covered briefly. There is also an interesting chapter on nickel alloys and monel metal. Sand casting, die casting and rolling are described. A glossary of foundry and other terms, also an excellent index, complete the book and add to its value.

Letters to the Editor

[The RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.]*

Employees and Their Investments

KENT, Ohio.

TO THE EDITOR:

The article in the *Railway Age,* March 17, entitled "Railroad Men Easy Picking" deserves much favorable comment.

The writer is conversant with a number of cases where railroad employees have lost a considerable amount of money by investing in worthless stocks. There are plenty of opportunities to make safe investments. A number of our employees invested in a savings and loan company that was organized in our city a few years ago. These men are not only earning a fair return on their investment, but are assisting their fellow-men in buying homes.

A number of railroad employees are depositing their money with the Brotherhood of Locomotive Engineers' Bank at Cleveland, which is also a worthy institution, and a safe place to invest surplus funds.

Before investing money in enterprises of any kind, employees should make a careful investigation from some reliable source as to the responsibility of the concern in which they contemplate making such an investment. Concerns offering large dividends should be more carefully investigated than those who offer only a reasonable return on the money invested.

W. W. WARNER,
Works Manager, The Youngstown Equipment Company.

Psychology in Railroading

ROCHESTER, N. Y.

TO THE EDITOR:

The problem of the British railways in finding proper colors for their locomotives and their passenger cars under the new policy of consolidation is, I think, indicative of the great care and precision with which the roads over there are constantly managed. May I be permitted to add that in my opinion it might be very well indeed if some of our American railroads were to use a little more thought in this regard?

Too many times our American passion for standardization, combined with that for extreme economy, has caused our railroad managers to lose sight of the very evident fact that there is something in their problem which at many times is far more important than immediate penny-pressing economies. That something may variously be translated as vision, foresight, even psychology.

It is well enough to laugh at the use of this last word. One large trouble with our American roads is that it is laughed at too much. That there is a psychology in the railroad's attitude both to its employee and its patron cannot longer be denied by any thinking man; while the exercise of that psychology in actual practice ofttimes comes down to as seemingly small and unimportant a detail as the color of the passenger equipment.

We have, in this country, at least three railroads that have retained a great deal of their individuality by the use of an individual color scheme for their passenger trains. These are the Pennsylvania, the North Western and the Milwaukee. The red of the one road and the varied shades of yellow of the other two mean more, I think, to the morale of their rank and file than an outsider would at first be tempted to believe. The Pennsylvania red, the Milwaukee orange, and the paler yellow of the North Western long ago endeared themselves to the men of their staffs, while to the patrons of these roads there is an appeal in stepping aboard, let us say, the gaily-colored and immaculate Olympian that one does not feel when one steps on board the dun-colored standardized equipment of the other railways. Such appeals can finally be translated into dollars and cents.

It is hard for me to believe that either railroad employees or railroad patrons have much respect for dirty, colorless trains any more than the employees or patrons of a merchant have for an unkempt store front without distinction of any sort. If individuality is a good thing for the merchant, why is it not a good thing for the railroads?

If I owned or controlled a railroad I think that the first thing I should do would be to paint its passenger equipment in gay, bright, distinctive colors. I might even go so far as to emulate the British lines and devise a coat of arms for my line—of a typically American sort, of course. Hard to keep clean? Of course. But just so much more stimulus to the men whose business it is to keep the equipment clean, and eventually, so much more pride in the performance itself.

EDWARD HUNGERFORD.

Relations With the Employees and the Public

HOLDREDGE, Neb.

TO THE EDITOR:

Your article on "Making Friends for the Railways" (*Railway Age,* December 23, 1922) is right to the point. The railroads certainly need friends among the public and their employees.

Let the employees know what the things cost they work with and the public the things with which they come in contact, especially the passenger equipment. Dining cars, with their high prices, are a constant source of irritation to the traveling public. A small note printed on the menu, giving the cost and any other item of interest would show that there is justification for the prices charged and that diners are run for the convenience of the patrons and not for profit.

A system magazine in which important building and construction work could be shown would be helpful. Employees take pride in an organization when they know something of its inner workings. With pride comes friendship which will automatically create a more favorable sentiment.

Labor organizations, as a whole, have been unfriendly towards railroads—and are yet to a large extent—but I believe that attitude is slowly changing. I think the more conservative leaders have seen the folly of an antagonistic policy for sometime, but either because the time was not right or because opposition was popular they have said nothing. However, now that many in the rank and file realize it is to their own interest to abandon such an attitude these leaders may change their attitude. In a short time the legislative committees of the train service organizations will be endorsing legislation favorable to railroads instead of opposing them.

A great deal of animosity has its origin with local conditions. A shipper with an unsettled grievance, however small it may be, can spread a lot of ill feeling. Why not have a representative (agents are not all suited for this work) appear voluntarily before commercial clubs or city councils to settle small grievances and incidentally give interesting and enlightening facts relating to the problems of the carrier. Many complaints could be headed off before reaching the press or railroad commissioners.

L. F. JAGGER.

Automatic Train Control to Supplement Signals

CHICAGO.

TO THE EDITOR:

In the *Railway Age* of February 10, several very interesting articles appeared which merit serious consideration and discussion. On page 363 is an editorial entitled "Extensive Economics on Single Track"; on page 364 an editorial entitled "Limitation on Automatic Block Signals," and on page 384 an article entitled "Three Collisions on the Union Pacific."

In the first editorial, installation of automatic block or other roadside signals is recommended, for the purpose of increasing capacity, while the subsequent editorial and article show the utter inadequacy of such signals in safeguarding train movements under adverse operating conditions.

There is no question but that by shortening block sections more trains may be handled over any given piece of track. There is, however, considerable doubt as to whether the safety of trains is thereby insured to the extent that is necessary and desirable. Far better results may be obtained by the proper installation of signals and automatic train control, than is possible by means of the provision of signal indications alone.

Such an installation would not only increase capacity, but would, at the same time, insure safety by enforcing speed restriction when conditions are such as to necessitate medium or low prescribed speed, stopping the train when necessity requires.

As illustrated by the three collisions on the Union Pacific, when a collision occurs under existing operating conditions and the question of speed arises, investigation shows that the train was moving "under control" and at "low speed," every care being taken to "insure safety," though the fact was brought out in the investigations of these accidents that Rule 101-A was disregarded in each case. Trainmen admitted that they had lost their bearings; and they passed signals without seeing the indications, and in some cases without seeing the posts. Fusees could be seen but a short distance, torpedoes were not heard at all and whistle signals were inaudible, except at very short distances. There was no evidence of anything wrong in connection with the locomotives, cars or signals.

In two of these collisions the approaching train was reported as moving at low speed and the results were not serious, while in the third collision "a special train, consisting of 12 baggage, express, mail cars and one dead-head sleeping car, ran into a standing freight, killing three employees and injuring one. The caboose and six freight cars were demolished and one of the two locomotives of the mail train was overturned." There was conflicting evidence as to whether the engineman had tried to control the speed properly.

The engineman did not see the flagman or fusees, and heard no torpedoes. There is some question as to the flagging, evidence being unsatisfactory.

The outstanding facts in connection with these accidents, to each of which the extreme weather conditions were a contributing cause, indicate that they were the result of inability on the part of the men in charge of the respective trains to operate safely under block signal indications and that they failed to be governed by the operating rules in effect, both as to tying up their trains in accordance with Rule 101-A, and as to passing automatic block signals in the "stop" position. The speed of the trains involved will probably never be determined, and, in view of all of the circumstances, it is a grave question whether the speed of any of the approaching trains was actually known, even to the train crews. It is stated that an automatic stop would have been useful at Buford and it is evident that automatic train control would have prevented not only the collision at Buford, but also the collisions at Hillsdale and Borie.

In the case of these three collisions, trains were being operated under adverse weather conditions. The visibility was extremely low, so that it was impossible to see the signals, or even the signal posts. Under these conditions it was impossible for an engineman to estimate the speed, within reasonable limits, as he was in each case shut off from both sight and sound of anything outside of the locomotive cab that would tend to enable him properly to govern his train or regulate the speed. In the howling wind not even a torpedo could be heard.

And yet, installations are being made along the same old lines. Automatic block signals are still being installed with the signal located from 25 to 50 ft. above the running rail of the track, so high up in the air that it is impossible for an engineman to observe the signal indications when the visibility is low. The engineman is located in the cab so that his head is from 10 to 15 ft. above the running rail of the track.

Good practice would point to the desirability of placing the signals at approximately the same height, or to repeat the signal indications in the locomotive cab.

As to the height of wayside signals, it will be remembered that when signals give the indications exclusively by positions, they are located at a considerable height above the rail, for the purpose of securing a satisfactory background, so that the position of the semaphore can be clearly observed as a daylight indication. With the introduction of the light signal, however, the necessity for placing the signals at such extreme heights is entirely removed. As a result, a far more efficient signal is now available in the light signal, the indications being lined up in the track line of vision of approaching enginemen. These indications are consistent by day or by night, and when the visibility is low, as during fogs, rain or snow, the light rays of the light signals may be far more readily observed. Indeed, it is safe to say that with light signals and automatic train control in connection therewith, not only would accidents such as those referred to above have been prevented, but the engineman would not have lost his bearings and would have operated safely, in spite of the extremely severe weather conditions.

It is where the train crews are operating under disadvantages that automatic train control is most useful. Speed control is essential to safety when the visibility is low. Some form of roadside signal is desirable to insure safety, particularly under conditions of low visibility. It will be noted that track circuits and appurtenances, as well as line control, required for automatic train control are also essential to automatic block signals, so that with an installation of automatic train control but a very small additional expense is required to include roadside signals of the light type.

Safety with capacity may be secured only by means of automatic train control installed with proper consideration for the local conditions in each case. Automatic train control should include varying speeds to govern train movements in accordance with standard signal indications, so that whenever a restrictive indication is displayed the train will be under continuous speed control and until a more favorable indication is received. Evidently safety cannot be secured by permitting unlimited speed in the face of danger, even though the train has previously made a full stop. This is particularly true in all cases where visibility is exceedingly low.

Automatic train control is to a railroad train as the lifeboat is to a steamship. It remains as a means of saving human life and property when, for any reason, the human agency fails.

J. BEAUMONT,
Vice-president, Regan Safety Devices Company, Inc.

"Little Drops of Water, Little Grains of Sand"

HAILEYVILLE, Okla.

TO THE EDITOR:

I have read with much interest the article by Mr. Forman entitled as above in the *Railway Age* of February 10. My observation, on long trips, relative to the numerous violations of the rules governing the operation of trains agrees substantially with the findings of Mr. Forman. Have asked myself the question many times over, what are the officers doing? Who is responsible for compliance with the rules? If a passenger on a train from Chicago to Dallas finds a half dozen violations of the operating rules, just by casual observation, what would he find if he went out for that purpose alone and were fully conversant with the detail regulations on each railroad?

The flagging rule is violated more than any other. The practice of some roads in relieving the flagman to a certain extent by transferring that duty to the train dispatcher, to be done by train order, is responsible for much carelessness on the part of trainmen. This is one of the most dangerous practices. How can any operating official countenance it?

A condition on some roads, which has a tendency to cause train and enginemen to become careless is the use of what is called the intermediate order. For instance, a train is scheduled with waits for a distance of 10 or 15 stations; it is the rule that this order be placed at each telegraph office as a *reminder* to the crew. With so many orders during the trip, and many of them "reminder" orders, the crew are likely to take a whole lot for granted when they pick up an order. If there is any reminder to be given to the crew it should be done in the way of a *restriction card* and not on a train order blank. The restriction card can carry the same information as shown on the reminder orders and then when a crew picks up a *train order* they will know it is not a duplication of something they have already had, and will read.

The following came under my observation sometime ago in Colorado. The trainmaster was going east on a local freight train; he was standing at the engine when the conductor came out of the telegraph office with his orders; the conductor and the engineer had not been on very good terms for a long time. The conductor had the engineer's orders rolled up and, as the engineer was standing on the ground talking to the trainmaster with his back to the conductor, the conductor shoved the roll of orders over the engineer's shoulder and in front of his face. The engineer grabbed the orders, climbed up into the engine, read the orders and stuck them in his pocket. The fireman was sitting on the fireman's side of the engine reading a paper. The conductor and the trainmaster by this time were about half-way back to the caboose, when a signal was given from the rear end and the train proceeded. The conductor and engineer both being good friends of mine, and to satisfy my curiosity, I made it convenient to be at the yard when they arrived the next evening and confidentially asked them if anything was said to them by the trainmaster about this matter; they both told me he did not mention it in any way, shape or form. Mr. Forman is absolutely correct in his statement that collisions are often the result of a combination of little infractions of rules.

Motto: Keep everlastingly on the alert for the little violations, and in this manner *prevent* collisions. *It can be done.*

J. L. COSS.

[The "restriction card" referred to by Mr. Coss is a form used in manual block signaling. For example, such a card might read:

To C. & E., No. 2:
Orders for your train are: Form 19, *No.* 80; Form 31, *none;* train order signal is displayed for *you.*
Block restrictions: *No. 2 meet No. 1 at Divisionville.*
C. SMITH, Operator.

The second paragraph is a virtual repetition of a regulation order, or part of a train order. Too many deliveries of the same order would be objectionable, as our correspondent says; but, on the other hand, the "restriction" would seem to be objectionable, also, on the ground that the substance of an order is written under circumstances not conforming to the strict requirements regarding the copying and repetition of orders which surround the issuing of Forms 19 and 31. It tends to get away from the principle that an order should be sent to all interested parties in the same form and, as nearly as practicable, at the same time.—*Editor.*]

The Motionless Freight Train

NEW YORK CITY.

TO THE EDITOR:

There is nothing more depressing to the railroad operating officer than to see a long and heavy freight train standing stock-still on the main track, as though its wheels were rusted to the rails, and no sign in sight that it is ever going to start. The huge locomotive is the very personification of the Demon Waste, and the experienced division-office accountant can quickly visualize the actual dollars that are dropping out of the treasury, like a stream of ten-dollar gold pieces being poured into a sewer!

I put this dark picture before you at this time simply to express a gratification (that every one must feel) which is aroused by your editorial note of December 2, 1922, page 1,028, telling how it may be changed to a bright picture. A saving of $2,500 a year by the use of one single remotely-operated switch, to avoid stops, is a fact of widespread importance. The superintendent whose lines are not already equipped with all such switches that are needed is derelict in his duty if he has not by this time read your editorial, got it well digested, *and acted on it.* It may be right and necessary for a street-car conductor to keep a car-full of passengers waiting a minute or two while he runs ahead at a grade crossing; but the brakeman of a freight train who runs ahead to open a switch represents as much waste each second as the street-car man does in sixty seconds. Every time a brakeman of a big railroad goes through these motions he advertises his line to the world as belonging in the class of little 20-mile "light railways" which make no pretentions to economical movement of long trains, and never indulge in intensive methods of any kind.

Your note says that A. R. A. committee report is *"full* of data" concerning savings by the wiser use of signals and interlocking. That may be so; but it almost seems empty when one reflects on the detailed information concerning (a) savings already made and (b) savings which may be made, that the committee has not yet got hold of, and which it mentions only by way of explaining its hope to get some of it later. The members of that committee ought to have an appropriation, with sufficient leave of absence, to study and write up that subject, without delay, on 50 roads, more or less. When I saw the report I thought of Phineas T. Barnum, the former noted showman. Being served, at a hotel, with a very small piece of steak he said, "Yes, waiter, that's the kind I want; bring on some!"

I am writing, as you did, wholly on the one point of economy. But, really, any road which boasts of the beauty of its parlor cars and the satisfactoriness of its scenery; and advertises the speed of its locomotives and the efficiency of its officers, ought to be ashamed of itself not to abolish this wasteful stoppage of heavy freight trains (even if the improvement were to cost something), just on the basis of esthetic propriety! Our big railroads ought to be as definitely ashamed of hand-thrown switches as they would be of wood-burning locomotives on their express trains, stopping every 20 miles to "wood up."

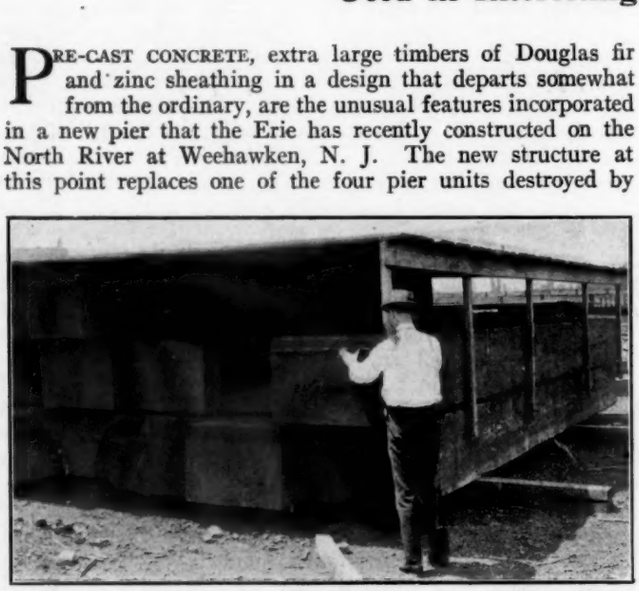
V. P. O.

Pre-Cast Blocks Partly in Place on Inshore End

Erie Builds New Type Pier at Weehawken, N. J.

Pre-Cast Concrete, Extra Large Timbers and Sheet Zinc Used in Interesting Fireproof Structure

PRE-CAST CONCRETE, extra large timbers of Douglas fir and zinc sheathing in a design that departs somewhat from the ordinary, are the unusual features incorporated in a new pier that the Erie has recently constructed on the North River at Weehawken, N. J. The new structure at this point replaces one of the four pier units destroyed by fire on November 3, 1921, but because of its larger size it gives the railroad facilities equivalent to about two of the old structures. Pre-cast concrete blocks were used in retaining walls and column foundations in order to secure thorough seasoning before use in salt water. A seven-foot sill of cinders surmounts the piling to obviate damage to the substructure from fire. Timbers as large as 24 in. by 34 in. in cross section were used in the superstructure to localize fire hazards while sheet zinc was used on the exterior to reduce maintenance costs and fire risks.



Some of the Large Douglas Fir Timbers Used

The original four piers known as Piers A, B, C and D at Weehawken measured approximately 720 ft. long and 100 ft. wide, each surmounted by a shed 700 ft. long and 96 ft. wide. The new pier, now completed, is 828 ft. long and 100 ft. wide, surmounted by a two-story structure 808 ft. long and 96 ft. wide. The fire that destroyed the old piers started on Pier D and spread rapidly to the others with the result that all four burned down to the water. A four-story warehouse was also destroyed and numerous cars of freight as well as lighters, barges, etc., were consumed by the flames or badly damaged. The experience of the road in this case led to the design of a structure and a type of construction which, in addition to being practically fireproof in itself, precludes any possibility of destruction below dock floor level in case of even the most extreme of fires.

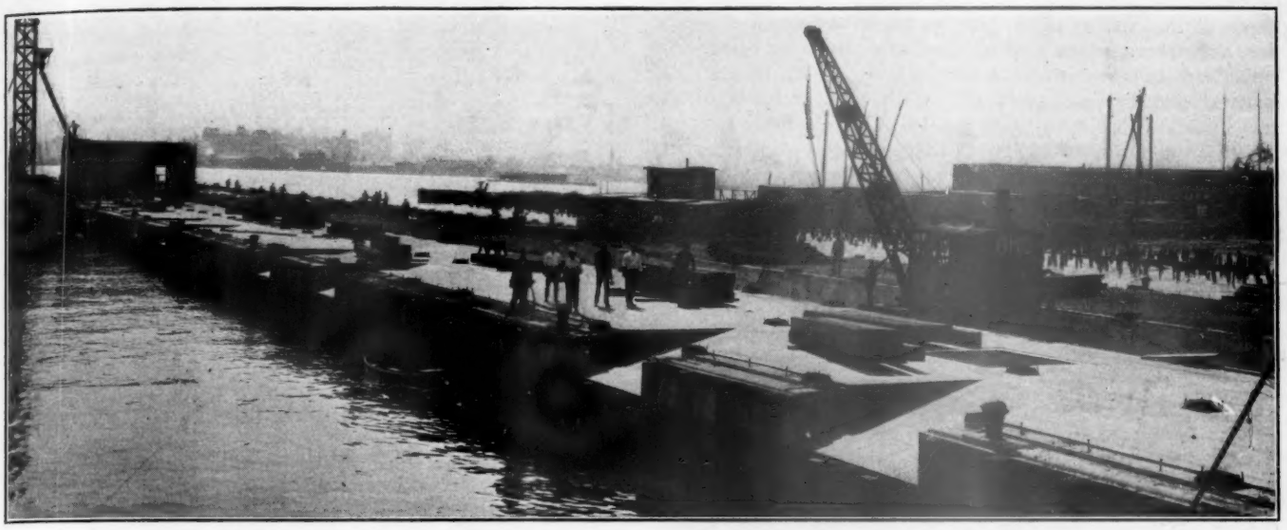
Piling and Pile Flooring Protected by 7-ft. Fill

Thus it was decided to keep the timber substructure, i.e., the piling, etc., at an elevation where it would be subjected to periodic soaking by the river water and surmount this with a deep cinder fill held in place by concrete retaining walls around the outer edges, a two-track runway along the center longitudinally and around the elevator wells, etc. Above this, mill construction of Douglas fir in the form of a two-story structure with 16 gangways completely sheathed on the outside with zinc and equipped with an automatic sprinkler system was used in order to secure maximum fireproof construction commensurate with a reasonable original investment and future maintenance costs. Thus in any case, if a fire should start, the chances were excellent that it could be localized or kept under control, if not put out quickly. However, if a serious fire should get out of control, the worst damage possible would be the burning of the shed down to the cinder fill, thus leaving the foundations intact.

Old Piling Showed No Signs of Marine Borers

As the new construction was to be supported on piles, it was desired to utilize as many of the old piles as possible, although the increased weight of the structure necessitated intermediate lines of piling as well as other strengthening in the form of additional piles under the columns, etc. In order to check their condition, many of the old piles, which

were of white pine, were pulled and it was found that after 30 years of service, they had suffered no deterioration and showed no signs of marine borers. They were, therefore, continued in service while Georgia pine piles were utilized for all additional work in the extension necessary for the increased length to 828 ft. and the increased foundation supports. About 4,300 new piles were driven in lengths varying from 60 ft. to 110 ft. in a mud stratum too thick to enable the piles to reach rock. All piles were cut off at 11 in. above mean low water and capped with 12-in. by 12-in. Douglas fir timbers, upon which a wood floor was built up from 6-in. thick by 12-in. wide splined timbers for the "clear" length and width of the pier. This work forms the foundation for the fireproof substructure. The wood used was untreated.



The Pier at Dock Floor Level—Concrete Fire Wall Being Poured in the Background

Since the above construction was subject to periodic soaking from the river water at high tide it was thought preferable to devise some method of erecting the concrete retaining walls and column foundations that would obviate any possible ill effects from pouring concrete in salt water. This led to the decision to erect the concrete work in two courses, the lower one of which was to be of pre-cast blocks.

Pre-Cast Blocks of Interlocking Design

The pre-cast blocks used for the outer wall were made uniform in size and so designed as to interlock with the upper course, the adjoining blocks and the timber flooring over the piling. Each block weighed approximately six tons. In cross-section perpendicular to the pier edge, the over-all dimensions of the blocks are 5 ft. 6 in. wide by 3 ft. 5 in. high, the two lower edges being recessed to fit over 12-in. by 12-in. timbers which come flush with the inner and outer faces. The upper surface is recessed 6 in. deep and 14 in. wide along the center longitudinal line of the block. Two handling stirrups are located in this recess. Lengthwise, i.e., along the line of the dock edge, the block is recessed on one end and built out at the other to conform to and engage with the adjoining blocks.

The interior pedestal blocks weighed about 4½ tons each and were pre-cast as truncated pyramids with a base 6 ft. square for those along the center tracks and 5 ft. square for those between the track wall and the outer edge. Likewise, pre-cast blocks were used for the elevator wells, of which there were eight. All pre-cast work was brought up to the same level. All blocks were poured by and allowed to season for about four weeks at the Newark, N. J., plant of the Massey Concrete Products Corporation and were shipped from there by boat to the pier location. They were lifted from the barges on which they were transported and placed in final position by floating derricks. Following this, steel forms were erected as quickly as the blocks were in position

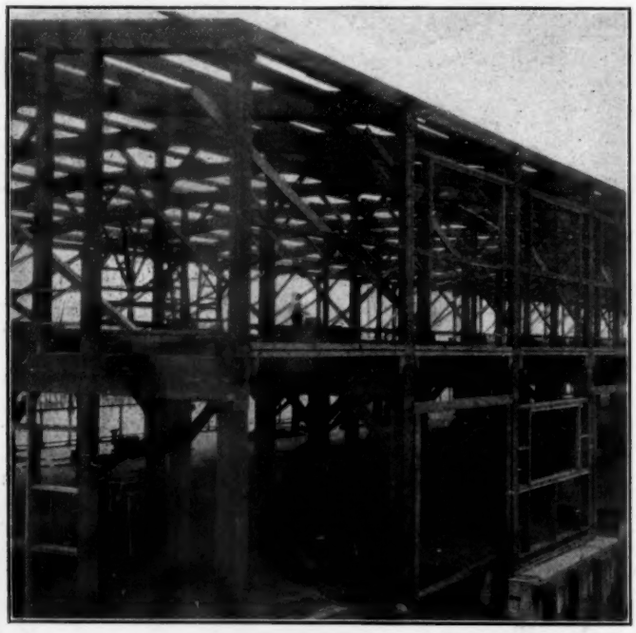
The Sheathing of the Pier Preparatory to Application of Zinc

and the upper course of the outer and inner walls, the elevator wells, the fire wall and pedestals poured. In the case of the outer walls the work was chiefly progressive around the piers, starting at one shore end and working out and around the pier. The depth and thickness of this upper course of the outer wall was 4 ft. 5 in. and 5 ft., tapering to 3 ft. 6 in. at the top.

The cinder fill was made in 12-in. layers, each layer being thoroughly compacted with a 5-ton roller. The total depth of the cinders in all but the track bay was 7 ft. The floor construction consisted of a series of 6-in. by 8-in. joists embedded in the cinders with 3-in. by 8-in. tongue and grooved flooring laid on that. With the exception of the track posts which were 14-in. by 14-in. timbers, all supporting posts in the construction of the first floor were 12-in. by 12-in. Douglas fir 12 ft. long.

Timber Girders 24 in. by 34 in. in Cross Section

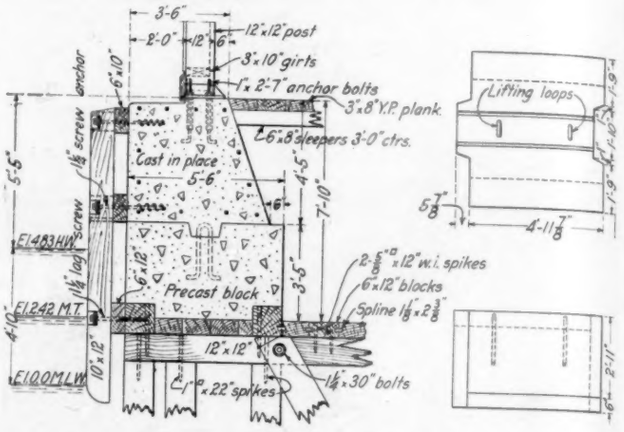
As stated earlier, extra large timbers of Douglas fir were used as girders to support the second floor of the structure. Two sizes in cross-sections were used. The timbers over the



A Section of the Pier Showing the Mill Construction Used

track bay are 24 in. wide, 34 in. deep and 26 ft. 3½ in. long while those of the side bays are 14 in. wide, 30 in. deep and 35 ft. long. These large timbers were framed in an adjoining yard and swung into place by means of a floating crane and a locomotive crane operating in the latter case on the dock tracks. The second story floor construction consists of 8-in. by 8-in. splined flooring of Douglas fir fastened to the girders with ⅝-in. spikes which were driven with riveting hammers. This level is divided into three bays transversely and 8-in. by 8-in. posts are used on the interior lines to support the roof structure with 6-in. by 12-in. ones on the outside walls. The roof girders are 12 in. by 22 in. on the sides, carrying 6-in. by 12-in. purlins spaced 6 ft. center to center. The roofing is of the tar and gravel type, laid on 2-in. planking. The clear height for the first floor and to the eaves on the second floor is 13 ft.

Eight Sommerville elevators have been installed. These are arranged in a staggered layout with four on each side of the pier. These elevators are about 6 ft. 6 in. square and are enclosed in shafts of fireproof tile with fire doors. An interesting feature of the pier is the actual division of the pier into two units by a concrete firewall which is located centrally and extends from the floor over the piling (seven feet below actual floor level) up through the roof to a point 3 ft. above the ridge. It is equipped with automatic fire doors across the dock tracks and elsewhere on each of the trucking floors. The closing of these fire doors is controlled by fusible plugs. In addition to this protection, a complete automatic sprinkler layout has been installed both inside and outside of the pier shed of the type known as the "dry" system. The

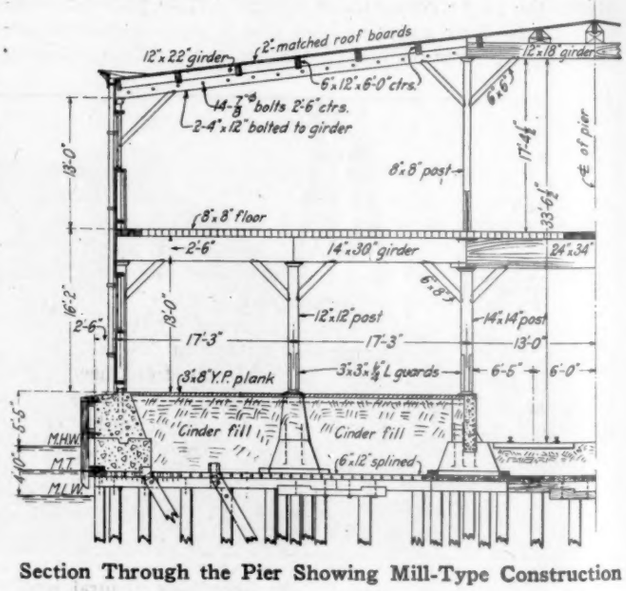


Concrete Bulk Head Construction

arrangement on the outside is the "deluge" curtain which consists essentially of a series of 8-ft. pipe sections which put down a sheet of water in case of barge or ship fires.

The Pier Shed is Sheathed with Zinc

The entire outer walls, and the window and gangway trims, etc., are sheathed with zinc, corrugated No. 11 sheet zinc being used for the siding and No. 13 plain for the trim, etc. This type of construction was chosen because of the



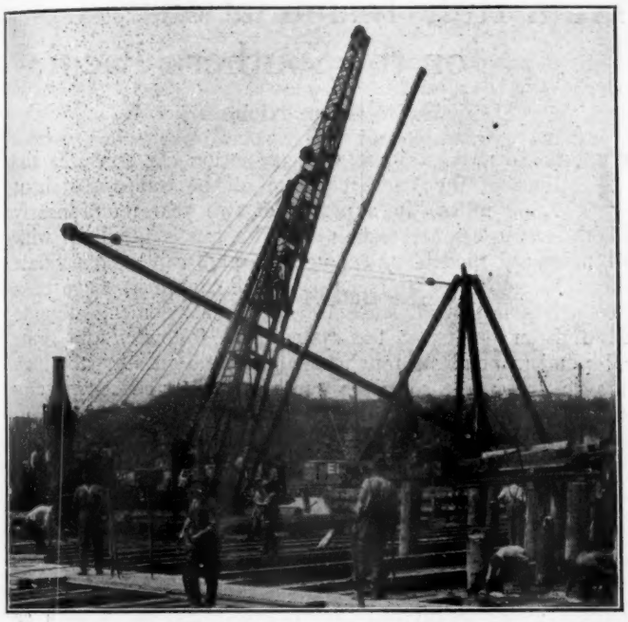
Section Through the Pier Showing Mill-Type Construction

long life and non-corrosive qualities of this metal in salt water locations in comparison to other materials and because of the non-necessity for painting. After weathering this metal turns a grayish color not at all unattractive. All sheathing was cut to size in advance of delivery and was simply nailed or riveted in place on the job. Zinc nails and rivets were used throughout. Since steel sash was used, it was necessary to insulate the zinc sheathing from the sash.

This was done by using a very heavy manila paper which had been given several coats of shellac.

Interesting Types of Pile Drivers

The presence of the old burned piling made it impossible to use marine pile drivers on the new piles with the exception of the extension for additional length. As all new piling, with the above exception, was placed between the lines of the old it was necessary to use drivers that could be operated over the tops of the piling. Two types were used, both of which are of interest. One of these units was a swing rig equipped with a turntable, enabling it to swing through a full 360 deg. With a working diameter of 54 ft., it was able to cover one-half the width of the pier. This machine was also equipped with steel dolleys which, in connection



Steel A-Frame Rig Driving Batter Piles in Foundation Work

with a track built up from cribbing on the cut-off piles, permitted it to move forward or backward quickly under its own power. The other machine was a steel skid, steel A-frame rig with 60-ft. leads pivoted in such a manner that they could be inclined to a maximum angle of 45 deg. in order to drive spur piling. Both were of the drop hammer type, using 3,600-lb. hammers in conjunction with 1,200-lb. follower blocks. An average of 115 piles per day were put down regularly by the two machines.

The new pier was designed by and constructed under the direction of the engineering department of the Erie, R. C. Falconer, assistant to the president and chief engineer; C. H. Splitstone, superintendent of construction and surveys; F. A. Howard, engineer of structures, and W. I. Jefferds, resident engineer in active charge of the work. Foley Bros., St. Paul, Minn., were the general contractors for the work; L. B. Fulton, superintendent, and C. L. Swenson, assistant superintendent.

THE CLAIM DEPARTMENT of the New York Central lines is now 25 years old, having been organized at Cleveland, Ohio, on February 17, 1898; and in honor of the anniversary, The Beacon, a monthly periodical of the department, published at Columbus, Ohio, has issued a special anniversary number. F. V. Whiting, now general claims attorney for all New York Central lines, has been at the head of the department throughout the quarter century, having been chief claim agent of what was the Lake Shore & Michigan Southern

Roads Ask Reconsideration of Scrip Coupon Book Decision

WASHINGTON, D. C.

WHILE THE EASTERN railroads have been planning to ask an injunction against the Interstate Commerce Commission's order prescribing interchangeable scrip coupon books the railroads which are members of the Western, Southwestern and Transcontinental passenger associations, together with the Baltimore & Ohio, have filed a petition with the commission asking that the proceeding be reopened for reargument and reconsideration. Pending such reargument and final determination they ask that the commission suspend its order and thereafter they ask that it abrogate its order and hold that there is no justification in law or in fact for finding that a rate for scrip coupon tickets should be lower than the current just and reasonable standard rates. The American Farm Bureau Federation, by its director of transportation, C. B. Hutchings, also has filed a petition representing that it has an interest in the matter and joining in the petition for reopening and reargument on the ground that the order is discriminatory.

The petition of the railroads says that the commission in its report fails to point out or to indicate any evidence whatsoever upon which it arrived at the conclusion that a reduction of 20 per cent would be just and reasonable for interchangeable scrip coupon tickets, and they therefore aver that the commission erred and reached its decision arbitrarily and counter to the evidence and to the rules and principles of law.

Referring to language in the report indicating that the origin of the mileage ticket "bore the color of an undue preference" the petition says: "It grew out of the very practice which at the outset inspired the enactment of the Cullom act, the Hepburn act, the Elkins act, and against which regulatory legislation has been directed for a generation. Nothing has been so condemned by law and by public opinion as preferences and discriminations. That large buyers of transportation should be favored against the rights of the smaller buyer is repugnant to every line and motive of the interstate commerce act."

That the public regards the decision of the commission as an unwarranted creation of a preferred class of travelers is established, the petition says, by various developments since the announcement of the commission's report. Reference is made to a letter from the Farm Bureau Federation urging the carriers to petition for a reopening of the case, and a resolution introduced in the Kansas legislature criticizing the commission's decision as an unjust discrimination against travelers of small means; also to plans of which the railroads say they have been advised, of the railroad commissions of Alabama, Georgia, Tennessee, North Carolina, Virginia and Mississippi for joint action to offset what they allege to be an unjust and unjustified discrimination. The petitioners say they are also advised that other state commissions and governing bodies are contemplating steps to meet what they believe is an unwarranted discrimination growing out of the commission's order. These developments are cited, it is stated, "to emphasize what we believe to be the commission's error in failing to construe the amendatory statute in harmony with sections 2 and 3 of the interstate commerce act in the absence of a direct mandate from Congress to disregard those sections. These developments are also significant as indicating the dire results threatened the carriers from various sources should the commission's decision be followed as a precedent for sweeping reductions in passenger fares as a means of overcoming the undue preference."

After stating that it is not easy to reconcile the commission's report and order in this proceeding with its action in the Wisconsin passenger fare cases, in which the commission

condemned discriminating against interstate passengers, the petition refers to the fact that the reduction has been ordered in spite of the fact that the roads have not been earning a fair return.

"Notwithstanding the fact, as here shown, that the carriers in the respective territories are earning a meager return and a return far below that necessary to attract needed capital to the indispensable transportation industry of the country, the commission has made a report and order whose result inevitably will make heavy inroads upon the carriers' earnings, thereby handicapping them in their operations and impairing their ability to attract capital to their needs.

"Respondents aver that by so sweeping and drastic a curtailment of revenues as is contemplated in this proceeding the commission itself accentuates the very financial problem which it deplored.

"The commission itself in its report refers to the reduction herein as an experiment. We submit, in great respect, that the commission erred in imposing upon these carriers a course of experimentation involving the loss beyond recovery of many millions of dollars (estimated from sixty millions upwards), and that it has thereby thrust upon these carriers —as well as upon the general public that is dependent upon transportation service—a hardship unwarranted by the facts and beyond any requirements of law. It is respectfully submitted that an experiment incurring so prodigious a depletion of the carriers' earnings, to which they have both a moral and lawful right and an urgent practical need, should not be undertaken in the absence of absolute proof of justness and reasonableness and of clear, emphatic and unmistakable compulsion of law."

Regarding the commission's reference to the apparent intent of Congress the petition says that "one thing is clear, and that is that Congress before passing this statute expressly and deliberately eliminated from its text specific figures. It came to the commission absolutely bare of reference to reductions. Since the statute, as the commission phrases it, does not upon its face 'indicate upon what basis' a scrip ticket should be issued, it is not to be presumed that the commission was expected to supply legislation to fill an omission which it discovers in an act of Congress.

"Under its construction of the statute the commission could just as well have found a 1 per cent reduction responsive to the informal wishes of Congress, with just as much or as little in the record to justify such a decision. This statement is impressively illustrated and confirmed by the text of the report, which shows that on the same record and under the same statute three commissioners reached the judgment that there was no warrant for a reduction below the standard basic fares, and one commissioner held the view that a 10 per cent reduction would be sufficient. In following its views of Congress' intention the commission has broken all records in the percentage reduction for mileage books or scrip coupon books and has extended over the entire country a greater reduction than was ever before commonly observed even when the application of the mileage ticket was restricted to small territories."

The petition of the American Farm Bureau Federation says that the decision as rendered by the commission "will in effect form a subsidy to those few persons who make a business of travel, such as the traveling salesman," and that "the entire benefits of the reduction will of necessity accrue to certain limited and specific classes or groups of people." This decision, it says, should be sharply distinguished from that in the western hay and grain case for the reason that the latter was reflected in the increased prosperity of certain sections of the country and in the increased freight traffic of the railroads. The petition continues:

"The efforts of the carriers and of the Interstate Commerce Commission to get the transportation system of the United States into proper working order have been directed to the right end. It is the first duty of all of us to bring about the prompt expansion of railroad facilities. The American Farm Bureau Federation respectfully protests against the decision on the ground that it is contrary to sound public policy, that it produces an unjust discrimination prohibited by section 3 of the interstate commerce act, that it tends to postpone and to prevent the renewed expansion of railroad facilities and that it makes impossible any needed general readjustment in the general level of freight rates or passenger fares."

The commission has eliminated the Lake Superior & Ishpeming and the Staten Island Rapid Transit from the list of roads required to issue scrip coupon books.

Train Rule Examinations on the Southern Pacific*

By William Nichols

THE SOUTHERN PACIFIC examination car traverses the lines of the Pacific System of the company (about 7,000 miles) in a period of two years; and nearly 15,000 employees are examined. The car is fitted up with all necessary models and diagrams and can accommodate about 30 employees at one time. The examiners have been engaged in this work since 1904. The same men, going to all division points on the system and following the same rules and principles throughout, are able to question the men in such a way that, so far as general rules are concerned, any employee is competent to serve on any division of the road. Thus in case of necessity men can be transferred from one division to another.

Besides examining the men orally, in the car, checks are made to see if train orders, train order books, train registers and clearance cards are made and kept strictly according to the requirements of the book of rules.

A period of six or seven hours is required for one examination, which is divided into two sessions, one known as the block signal examination and the other as the train order examination. If an employee does not come up to the standard requirement he is notified to study the rules and return for a re-examination. The number of times he may be recalled before being disqualified, if such action becomes necessary, depends upon the judgment of the Board. The Board considers that the best results are obtained by educating those already in the service rather than to take new or raw material and educate from the beginning. It has been demonstrated a number of times that our poorest men are better than those we get from foreign lines where little or no attention is given to the education of employees on the rules. The worst men to contend with are those that declare that they are so busy they haven't had time to read their book of rules, and those who use that old excuse, "If you work according to the book of rules you will tie up the railroad." Such men get the maximum of attention from examiners.

THE FREIGHT CLAIM DIVISION of the American Railway Association has issued an illustrated circular called "Links in the Chain of Transportation," in which the stages through which a shipment passes from a shipper to a consignee are represented as a chain of twelve links, each of which encircles a suggestion for the prevention of freight claims. The links are labeled: the package, the markings, the description, the loading, the stowing, the billing, the protection of the car in transit, the handling of the car, the unloading at destination, the arrival notice, the protection at destination and the delivery receipt.

*Abstract of an article in the Southern Pacific Bulletin. Mr. Nichols is chairman of the Board of Examiners, of the Pacific System.

Character and Effect of Federal R. R. Regulation*

Act of 1920 Being Given First Test Under Normal Conditions, a Warning Against Reverse Coueism

By Walker D. Hines
Former Director General of Railroads

THE PRESENT YEAR, 1923, gives promise of being the first approximately normal railroad year since the war began in 1914, so that it seems a particularly appropriate time to try to view in its normal aspects the scope and effect of existing railroad legislation.

The railroads have emerged from an exceedingly trying period with rates very high and unsatisfactory to the public, and yet earning less than a fair return, and with a recent record of unsatisfactory service due largely to the extraordinary difficulties incident to the dislocation of the coal industry by the coal strikes and of railroad operation by the shop strike.

C'Est La Guerre

All these troubles have come close home to the public, and the public, as well as various railroad people, have shown the usual disposition to jump at conclusions without sufficient examination of the facts. The war created fundamental difficulties which could not instantly be successfully overcome. Practically nothing else in the world has functioned satisfactorily, and the fundamental cause has been the disrupting influences of the war.

Subsidy or Government Operation Only Alternative to Adequate Revenues

The public is disposed to the view that the rate-making basis of the Transportation Act has produced rates which are very high and therefore the basis must be unsatisfactory. We must, however, face the facts and realize that the rates are high because the costs are high and unless some way can be found to cut down the costs, there is no way to escape high rates without bankrupting the railroads and seriously impairing railroad service unless the government exercises the power of taxation to make up any deficit in the revenues yielded by the rates.

Clear thinking compels us to face the fact that we cannot successfully run away from the cost of railroad operation and that that cost must be paid in some manner. So long as that cost is to be paid through rates and not through government subsidy or government operation, then the rule of the Transportation Act is the fairest possible rule to apply. No proposal should be made to abandon that rule, without including some substituted method for covering the costs of railroad operation either through government subsidy to the railroads under private management or through government acquisition of the railroads.

Public Intervention in Labor Disputes Inevitable

As to railroad costs, one of the most important is the cost of labor. On this subject there has been a great deal of confusion of thought. There has been a disposition to assume that the Labor Board which was created by the Transportation Act has been responsible for the high labor cost, and that the labor costs could be greatly reduced by the simple process of abolishing the Labor Board. Added to this public confusion on the subject, there has been a widespread disposition on the part of railroad managements to feel that the Labor Board constitutes a serious interference with the freedom of railroad managements in dealing with labor, and hence there has been considerable insistence in railroad quarters that the United States Railroad Labor Board should be abolished.

I wish to point out that there is bound to be a certain measure of public intervention in fixing railroad wages and that this will not be avoided by abolishing the Labor Board, but will simply call for some substituted method of public intervention, and then I wish to show that the principal limitation on the management in connection with the labor situation will continue to exist regardless of what form of public intervention there is. This is true because the principal limiting factor is that it is now well recognized that the employees are entitled to a voice in fixing their wages and working conditions and hence that these matters are not entirely within the control of the management but must be so handled as to secure broadly the concurrence of the employees themselves.

The most obvious public interest in the railroad labor problem is to see that railroad service, which is indispensable to the public because in a large sense there is no alternative, shall be free from interruption. Hence the public wishes to see that questions between the carriers and their employees are so disposed of as to avert strikes.

Emergency Difficulties Giving Way to Opportunity for Normal Functioning

The practical question is as to the character and degree of the public intervention, bearing in mind that such intervention is bound to come where a serious clash is threatened. The labor provisions of the Transportation Act are new and experimental. Doubtless they will be improved with time. Meanwhile it is important to bear in mind that in principle the Labor Board is merely a fact-finding tribunal to be resorted to when, and only when, the railroad management and the employees are unable to agree. The Board's findings are not binding upon either side, but are merely to inform public opinion.

As matters become more normal, there should be less and less need for the reference of disputes to the Labor Board, and the present indications are that the managements and their employees are working these things out among themselves to a far greater extent, and the continued improvement in this direction will finally leave the Labor Board where the Transportation Act intended it to be and that is as the fact-finding body to report on the occasional disputes which cannot be settled between the managements and the employees. It was only because of the extraordinary emergency existing in 1920 that the Labor Board, against its wishes, was forced into a situation where it had to deal, for a period of more than two years, with practically all the questions of wages and working conditions that arose throughout the entire country.

I have no doubt that methods will be found of improving the character of public supervision of these labor problems and I imagine the Labor Board itself from time to time will have occasion to recommend improvements in the regulatory machinery. But it can be accepted that in some form public intervention will continue. It is largely a question whether it will be absolute fixing of wages and working

*From an address before the City Club of Toledo, Ohio, on March 24, 1923.

conditions as an accompaniment of prohibition of strikes, or some fact-finding tribunal to act in case of disagreement and inform public opinion but not control the parties.

Employees Entitled to a Voice

Many suggestions have been made that if there are to be railroad labor organizations, the organizations on each railroad system should deal directly with the management on that system, and that there should not be nation-wide labor action. There are, no doubt, many reasons in favor of system negotiations in these matters, and there is nothing in the Transportation Act, or in the policy of the Labor Board, to interfere with such system negotiations. The degree of their success will be dependent upon the extent to which the management can establish such contact with its employees and such a condition of mutual confidence as to bring about the desired result. Certainly system negotiations to the exclusion of regional or nation-wide negotiation is not likely to be brought about by legislation, nor did that situation exist before there was any legislation on the subject, because in the case of the train and engine men the system brotherhood unions had unified into national organizations long before the time of the Transportation Act, and these national organizations dealt with negotiations with the managements regionally or nationally.

While organization of employees in other classes did not begin on a large scale until some time after the train and engine brotherhoods were formed, a great deal of progress in such organization had been made prior to federal control.

Federal control changed the situation and dealing with unions of all employees became almost immediately settled in fact as well as in principle. At the end of federal control the resulting condition of widespread organization was a factor of tremendous importance. It is now commonly recognized that the railroad employees in general are entitled to a voice in the determination of their wages and working conditions similar to that enjoyed before the war by the train and engine men on all the railroads and by certain other classes on some of the railroads.

Much is said, however, as to the increase in cost due to the fact that railroad wages and working conditions are standardized to too great an extent, so that wages are unnecessarily the same in widely separated parts of the country. It is important to emphasize that this condition was not created by the Transportation Act and was not created by the Labor Board and will not be eliminated by any legislation that could now be adopted. The only way to eliminate it is by a gradual process of local readjustments between the managements and the employees.

No new legislative policy is going to relieve the managements of the complications arising from the necessity for negotiating with their employees as to changes desired by the management in the present status as to wages and working conditions. If the negotiations are successful, the changes can be accomplished under the present law. On the other hand in the event of failure of negotiations, the public's interest in uninterrupted railroad service is so vital that it is clear that even if the present labor provisions of the Transportation Act were repealed, the public would insist upon some form of intervention, at least by a fact-finding tribunal.

Management Continues to Have Wide Initiative and No New Legislation Needed

It results, therefore, and it is very important, that vital limitations on the management in respect of labor are going to remain, whatever form the federal legislation may take. But if these limitations are frankly accepted and the necessary effort is cordially made I believe the new relationship with labor will bring much more than compensation for the limitations.

The disposition to assume that railroad difficulties are due to something wrong with the provisions of the Transportation Act has led many people to the still further erroneous conclusion that in some way the present state of railroad legislation prevents reasonable freedom of action on the part of railroad management with respect to elements of cost other than the labor cost. Broadly speaking, this is not true and the situation is not substantially different from what it has been for many years.

To begin with, a stupendous cost of a very disquieting character is the burden of railroad taxes. This, however, merely differs in degree and not in kind from what the burden of taxation has always been in the past; and no new principle of public policy will change it. As to taxes, the railroads have the same interest as the public in general to urge economy in government, so as to reduce what has come to be an increasingly alarming burden, and a burden which in my opinion passes itself along until it finally rests principally on the great unorganized mass of producers and consumers.

With respect to operating costs, for a long time the railroads have been subjected to federal legislation in the matter of safety appliances and to considerable state legislation controlling details of operation, and much of this state legislation, such as full crew laws, is decidedly irritating. But broadly the managements are free to arrange their operations uncontrolled by legislation. They can formulate and carry out their policies as to train operation, as to terminal methods, as to handling interchanges with connections, their programs as to maintenance, their methods of making purchases, their methods of storing supplies, etc., etc., according to their own judgment. It is true that the Transportation Act has conferred upon the commission certain broad powers of interference in railroad operation in times of emergency, but generally speaking these do not constitute a serious interference with railroad freedom.

The fact is that there are great opportunities for initiative and efficiency in revising operating methods to meet present conditions; and one of the greatest is to secure greater productiveness of labor through promoting better understanding and co-operation.

Consolidation Promises Economy and Improved Public Service

Years ago I was forced to the conclusion that much needless cost and impairment of service and much needless confusion of railroad policies grew out of our having so many different railroads. It is interesting, too, to note that the progressive policy of the Transportation Act in this respect is in line with what is happening elsewhere. We see in France a new railroad regime with the very closest co-ordination of the five or six railroad systems in that country. We see in England the recent consolidation of all the railroads into four great systems.

Give Act a Fair Trial Under Normal Conditions

We find that the principal thing that distinguishes the railroads in this country from the other great industrial enterprises of the country is that these other enterprises are able very largely to fix their prices, and to make sure that those prices are ample to cover their costs whatever their costs may be, and if in particular instances the prices they are able to get do not satisfactorily cover their expenses, they can simply discontinue operations at the particular plants which are unfavorably affected. Of course we can accept it that in these respects the railroads will never be like other industrial enterprises. The public is never going to relinquish its power to pass the rates which the railroads will charge and the railroads will never be permitted to discontinue operations simply because they may be temporarily unprofitable. I think, therefore, it is a mere confusion of the issue to lament

because railroads are not like other business enterprises. We must accept the fact that they are different in the vital respects I have mentioned, and must face the situation on that basis.

It is important to bear in mind that the public and the railroad managements have been subjected to such a great variety of difficult problems that it is not surprising that a considerable degree of discouragement and confusion of thought should arise. But this very state of discouragement and confusion makes it imperative that we clarify the situation, take better stock of the opportunities and stop imagining that no opportunities remain. *In the present year 1923 with its favorable promise of normal railroad operations, we should study the functioning of the Transportation Act on its merits, free from prejudice based on disappointments which were due not to that act but to war and past war difficulties.*

As to rates, it must be accepted that they will continue to be fixed by some form of public authority, and that they must be adequate to cover cost, including just return on capital, unless government ownership or government subsidy is to be substituted.

As to labor, it must be realized that the problems do not arise principally out of legislative policy, but rather out of recognizing the right of the employees to a voice in fixing their wages and working conditions, and out of the peculiar difficulties of readjustment of existing wages and working conditions, and that these matters will still remain even if new legislation can be adopted, and that public intervention in some form in the event of failure of negotiations is inescapable.

As to other costs, it must be realized that the degree of legislative interference at the present time is comparatively small, and that the great bulk of operating discretion remains as heretofore, except so far as affected by new developments of working conditions of the employees. With a due appreciation of these things, the situation ought to be relieved of the false idea that the troubles are traceable to vicious legislative policies. It should be recognized that the Transportation Act is a great improvement on any scheme of regulation heretofore adopted, and that it would be wholly unjustifiable to fail to give that act a most sincere and sympathetic trial.

Addressing railroad management, I would say that above everything else the situation should be relieved of the benumbing influence of the doctrine that railroad managers no longer have any initiative or opportunity. It requires only the continued preaching of this doctrine to make private operation an utter failure. The fact is that for every opportunity lost through the developments of the war and past-war period, a new opportunity has come into existence. Both in the relations with the public and in the relations with the employees opportunity arises for developing new and successful methods of contact and for creating a growing appreciation of community of interest, and a growing sentiment of support. As to railroad operations in general, there is a large field for the development of new initiative and ingenuity in the adaptation of operations to the changed conditions. During the era when the railroads were built and their present operating policies were shaped, the great railroad men were those who found ways to overcome the numerous obstacles, and not those who dwelt upon the insuperable character of the obstacles. In the present day success calls for a similar spirit applied to new sorts of difficulties.

In fact, many railroad executives and managers seem to be going forward in a courageous and intelligent grappling with the new problems which have arisen. It would be disastrous if this spirit should be broken by continued preaching of the false ideas that we hear from time to time that the principal difficulties are due to a wrong legislative policy, and that a fundamentally different legislative policy is obtainable and would remove these difficulties, and that meanwhile opportunity for substantial achievements does not exist. All the emphasis should be on their duties and opportunities under existing conditions and on the necessity for new spirit and new methods to cope both with the present and with the future.

The worst thing that could be done to railroad management would be to invoke a sort of reverse Coué-ism and constantly say: "From day to day in every way railroad management is becoming weaker and weaker."

Addressing the public, I would say that the thing of greatest importance is to avoid the fatal mistake of constant shifts of policy in an effort to escape the facts. No policy could have flourished in the abnormal years through which we have just passed. No policy can ever succeed unless it is given a fair trial. The worst possible policy is a constant shift in policy on account of temporary discouragements. The Transportation Act represented a gradual evolution of the thought of the country that there ought to be an adequate effort to make a success of private operation of the railroads. It should be adhered to unless the definite conclusion is reached that a government subsidy or government operation is to be adopted as the country's public policy. Above everything else, it should be remembered all the time that in one form or another the cost of railroad service must be paid for and that the failure to pay for it out of rates will result in the long run in its being paid for out of taxation because the public must have the railroad service and cannot permanently accept the impaired service which would be the outgrowth of inadequate rates in the absence of a government subsidy or government operation.

The Cost of a Train-Limit Law

THE LEGISLATURE of New Mexico at its last session, had before it two bills, designed to limit the length of freight trains, both of which were defeated; but not until after a considerable campaign. The first bill limited every train to 50 cars, but this was defeated with little delay; but a second one was introduced, designed to accomplish the same purpose in a little different way. This called for a limit of 14 cars in passenger trains and 75 cars for freight trains; also limiting the length of freight trains to 3,000 ft. This last bill was passed by the House, but was defeated in the Senate by a vote of 18 to 5.

William Wilson, superintendent of the Southern Pacific, presented an argument against the bill, giving data, in some cases for a period of 12 months and in other cases for a shorter time, showing from past records what the actual effect of such a length limit would be.

In the year 1922, the Southern Pacific moved through New Mexico, eastward, 50,000 loaded refrigerator cars; and the records show that if the trains in which these cars were moved had been limited to a length of 3,000 ft., there would have been necessary 21 additional trains, the cost of which is estimated at $12,776. In the same time, the company moved westward through New Mexico, 50,000 empty refrigerator cars; and these would have required, under a 3,000 ft. limit, no less than 235 additional trains, the cost of which would have been $143,974.

To accommodate the automobile traffic, and the Louisiana sugar cane traffic, the company has built and bought a large number of long cars; box cars 54 ft. long and platform cars, 44 ft. long.

In the last six months of 1922, the number of loaded automobile cars moved through New Mexico, westbound, was 5,500; and if these had been moved in trains limited to a length of 3,000 ft., 36 additional trains would have been

necessary, costing $21,910. The number of similar cars moved eastward, loaded, was 4,151; additional trains necessary, 27; cost $16,426. A similar calculation, based on 900 empty box cars and 3,000 platform cars, showed 22 additional trains necessary, costing $13,384.

The railroad company's argument also called attention to the additional risk of collision, on a single track road, by every increase in the number of trains run. Another point was that the locomotives on this section of the line had been designed and built to secure maximum efficiency; it was shown that if trains were to be restricted as to length, it would be necessary in the interest of economy to transfer these large engines to other divisions and put smaller ones in service here; and in this case the enginemen would earn lower wages.

One argument adduced in favor of the law was that it would increase safety; but it was shown that in Arizona, where there is a full crew law in effect, there has been no reduction in accidents, as compared with conditions in New Mexico.

The Southern Pacific Company, within the last two years, has expended for the improvement of the road in New Mexico, to fit it for heavier trains, over $2,000,000; and with the work now being carried out, the total of the expenditures will be $4,398,051. A large sum will have been expended uselessly if the benefit from better track and larger locomotives cannot be availed of. The additional expense for trainmen and for fuel in the State of Arizona in 1922, because of the full crew law, was $124,000.

The operation of the full crew law in Arizona was described as follows:

"In times of normal business, we find it difficult to secure sufficient competent train service employees to handle the business without delay and especially when business is heavy, as it has been on the Southern Pacific in New Mexico and Arizona for the last year. On account of the shortage of competent men, many times we have engines and all of the crew ready except one or two brakemen, to run a train; with the result that it is delayed waiting for one or two men. The same condition applies to running engines light. Many times we have two or three engines ready to start light to move trains of perishable or stock east and engines are delayed, waiting for some brakeman to become rested in order to act as a flagman." Incidents were cited where a brakeman was found asleep when he should have been alert; where enginemen in charge of engines without trains took no pains to tell their brakemen to give proper protection by flag, and other difficulties in maintaining proper discipline.

Commission Reports on Railroad Equipment Condition

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION on March 20 submitted to the President a report for the month of February showing the condition of railroad equipment and related information called for in Senate Resolution 438, dated February 26, which requires that such information shall be submitted monthly to Congress and, when Congress is not in session, to the President. The report gives figures showing the percentage of cars and locomotives unserviceable by months for the past two years, showing 9 per cent of freight cars unserviceable in January as compared with 13.6 per cent in January, 1922, and 8.8 per cent in January, 1921. The percentage of road freight locomotives unserviceable in January is given as 26.1 as compared with 24 in 1922 and 25.2 in 1921. The percentage of road passenger locomotives unserviceable is given as 24.4 as compared with 22.5 last year and 24.1 in 1921.

Semi-monthly figures published by the Car Service Division of the American Railway Association are also included, which show 9.1 per cent of the freight cars unserviceable as of February 15, 22½ per cent of road freight locomotives and 22.1 per cent of road passenger locomotives. There is also a summary of casualties on steam roads for 1919, 1920, 1921 and 1922 and a report of the Bureau of Locomotive Inspection showing a considerable increase in the percentage of locomotives inspected and found defective or ordered out of service and in accidents caused by the failure of some part of the locomotive or tender during the last six months of 1922 as compared with the first six months. This table is as follows:

REPORT OF THE BUREAU OF LOCOMOTIVE INSPECTION

1922 Month	Inspected	Defective	Per Cent	Ordered out of service	Accidents (a) (b)	Killed (a) (b)	Injured (a) (b)	Totals Accident	Killed	Injured
January	5,903	2,585	43	220	45— 6	1— 0	49— 6	51	1	55
February	5,582	2,562	44	272	46— 9	1— 0	50— 11	55	1	61
March	6,144	2,855	46	276	43— 18	2— 0	45— 27	61	2	72
April	6,467	2,921	45	268	33— 12	0— 0	34— 13	45	0	47
May	6,252	2,632	42	219	34— 5	3— 0	34— 10	39	3	44
June	6,597	2,868	43	256	43— 10	3— 0	61— 10	53	3	71
Total	36,945	16,423	44	1,511	244— 60	10— 0	273— 77	304	10	350
July	4,085	2,456	60	168	68— 41	1— 0	69— 78	109	1	147
August	6,105	4,355	71	469	82— 56	3— 0	90— 58	138	3	148
September	6,160	4,421	71	759	94— 44	7— 0	96— 44	138	7	140
October	5,628	3,997	71	736	77— 39	4— 0	82— 41	116	4	123
November	5,488	3,766	69	731	101— 34	11— 0	110— 35	135	11	145
December	3,321	2,115	64	405	101—(c)	2—(c)	115—(c)	101	2	115
Totals	30,787	21,110	68.5	3,268	523—214	28— 0	562—256	737	28	818
1923										
January	5,540	3,640	66	859	98—(c)	13—(c)	110—(c)			
February	4,138	2,654	64	527	113—(c)	5—(c)	122—(c)			

(a) Number of accidents, killed and injured, reported as caused by the failure of some part of appurtenance of the locomotive or tender, by carriers to the Bureau of Locomotive Inspection.
(b) Accidents, killed, and injured, reported to the Bureau of Statistics, but not reported as required by the Boiler Inspection Act as amended.
(c) Months for which records of Bureau of Statistics have not been checked.

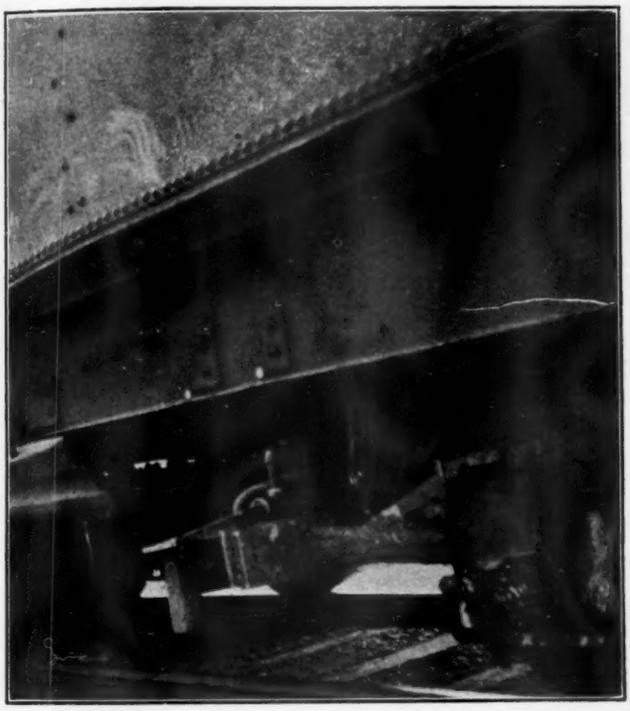
There is also given a report of the Bureau of Safety as to the number and percentage of cars inspected and found defective during February as compared with February last year. This shows 7.6 per cent of the 77,736 cars inspected during the month as having been found defective, as compared with 3.6 per cent in February, 1922, and 1.2 per cent of the 1,358 passenger cars as compared with 1.4 per cent in February, 1922. In response to the question in the resolution as to any action taken by the commission, the report says it has instituted an investigation of the supply and condition of equipment.

During February, 32 cases involving 199 violations of the safety appliance acts were transmitted to the various United States attorneys for prosecution.

Test of the Automatic Control Company's Device

All-Air Type of Train Control Equipment Operated by Movable Trip Demonstrated on Big Four

A TEST OF THE AUTOMATIC train control device, which has been developed by the Automatic Control Company of Indianapolis, Ind., was made on the Cleveland, Cincinnati, Chicago & St. Louis at Sunnyside station, four miles west of Indianapolis, on March 20. An Atlantic type passenger locomotive was equipped with the apparatus and the roadside elements were located at a double signal



The Engine Trip Located on the Tender Showing Arm Which Engages Track Element

location on double track. Four test runs were made with varying speeds on the westbound main track. This track has a 0.4 per cent ascending grade.

The train control apparatus developed by this company is what is known as the electrically controlled mechanical trip type. The roadside apparatus includes a movable trip in the form of a 90-deg. segment of a circle, which is operated by an electric motor. The train contact element is operated by the roadside element when conditions require that a stop should be made. Train contact elements are placed on each side of the tender just back of the front truck and provide for forward or backward movements.

The engine equipment consists of a normal direction valve, proceed valve, engine trips for both right and left side of the engine, a throttle closing cylinder and an air brake safety device. The track element consists of a movable trip mounted in a suitable housing to protect it from weather conditions. It is operated by a mechanism similar to that of the wayside signals and wired in series with the wayside signals. The same relay and control circuits that control the wayside signals, control the track element of the automatic control.

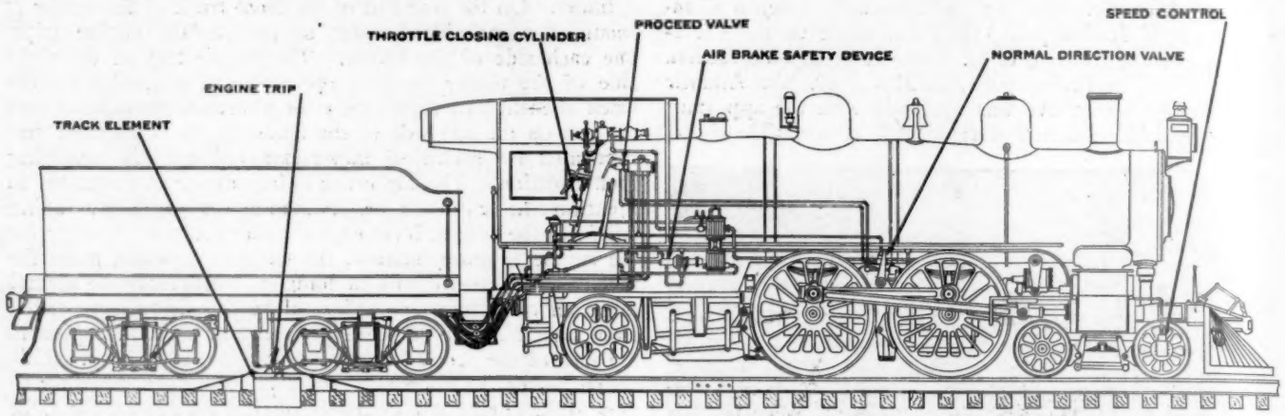
Connected to the reversing gear of the engine, is a normal direction valve. Inside of the engine cab is a proceed valve in a convenient place for the engineman to operate it. Mounted upon the face of the boiler is a throttle closing cylinder. On the rear end of the front truck of the tender is mounted a suitable bracket supporting the engine trips, one each side of the tender. The engine trip on the right side of the tender truck is operated and controlled by the track element and signal governing forward movements and the one on the left side of the tender truck is operated and controlled by backward movements and signals governing that direction. The air brake safety device is connected to the train line or brake pipe. Assuming the engine is standing still with the reverse lever on the center position, in order for the engine to move forward, the engineman would move the reverse lever forward, and in doing so, would move the normal direction valve forward. This allows the air pressure taken from the train line or brake pipe to flow through a pipe to the face of the proceed valve, forcing its piston back. This action moves the slide valve to a position permitting air to flow to the engine trip cylinders forcing the trip on the right side of the tender outward to the operative position and the trip on the left side is forced into the inoperative position. Should the engineman reverse the engine, the normal direction valve would set up a condition automatically that would be governed by backup movements and the automatic control will only be operated by signals governing for that direction.

The Relation of the Track Element to the Signal Location

The Track Element

The track element is located in a position as indicated in one of the photographs, arranged so that proper clearance is obtained. It is protected by a heavy piece of boiler plate arranged in the form of a ramp so that dragging equipment will ride over it. When in the proceed position the track trip is forced down into its housing. This raises its counterweight and stretches the pull spring. The track trip is held

in the clear position by a pair of slot coils or magnets. These slot coils or magnets are wired in series with the slot coils or magnets of the wayside signals in such a manner that when the wayside signals go to stop position, the track element of the automatic control is set in the stop position. When the wayside signal is in the proceed position, the track element of the automatic control is in the proceed position. Should the wayside signals be in the stop position and the engineman disregard the signals, the track trip of the track element would engage the trip arm of the engine trip and open the application valve to application position. This action will simultaneously exhaust the brake pipe pressure and the throttle closing pressure, and in so doing automatically shut off the steam and apply the brakes. The engineman to proceed must close the application valve and then release the brakes, which in turn releases the throttle valve lever.



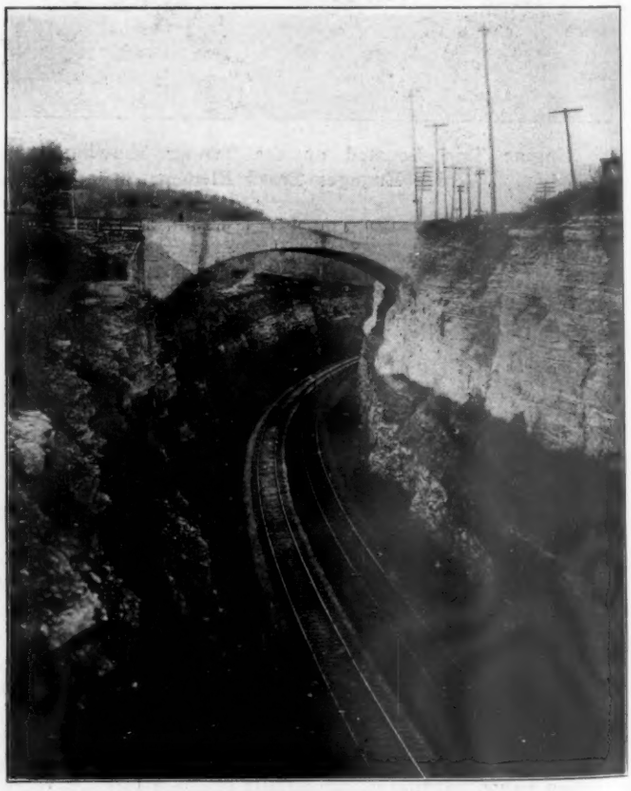
The Location of the Apparatus on the Engine and the Relation of the Engine Trip to the Track Element

Tests Made

The train used in the test consisted of an Atlantic type locomotive with Westinghouse E T brake equipment, two steel coaches and one business car. The first test was made with the train running at a rate of 22 miles an hour at the time contact was made with the movable trip member on the track. The train was brought to a stop in a distance of approximately 325 ft. On the second run the speed of the train was 25 miles an hour and it was stopped in a distance of about 495 ft. For the third test the speed of the train was increased to 43 miles an hour, the stop being made in approximately 1,000 ft. in a time of 23⅘ sec. The fourth and last run consisted of the train traveling at 52½ miles an hour at the time the trip was encountered, the stop being made in a distance of about 1,500 ft. in 26⅖ sec.

When the engine trip engages the track element its movement first opens at ½-in. air port to atmosphere and again closes it when the engine trip has reached the limit of its travel, in a manner lapping this port. A small by-pass, however, allows air to continue to exhaust after the ½ in. port is closed. The apparatus as arranged is designed to produce an emergency application. No speed control apparatus was used in connection with these tests. Big Four officers and representatives of the Automatic Control Company were present at the test.

The Location of the Track Element Along the Roadside



A Deep Cut on the Louisville & Nashville

Heavy Grain Traffic Assists C. P. R. 1922 Net

Reduced Expenses Also Factor—Last Quarter Compensates for Smaller Traffic in Early Months

THE CANADIAN PACIFIC has characteristics which are distinctly its own. Similarly it has a problem which is substantially different from that of any other railroad on the North American continent. Whether this problem is one that is more or less complex than that which confronts the average railroad in the United States might be made the subject of an interesting discussion. In some respects it is much simpler, notably, with reference to the important fact that the Canadian Pacific has very fortunately not been subjected to as severely repressive regulation as have the railways in the United States. More particularly, it did not have to undergo a period of 26 months of federal control—a factor hardly susceptible of too great emphasis.

On the other hand, the Canadian Pacific is now in the special position of being the competitor of a government-owned railway system which includes practically all the important railway mileage of Canada outside of its own lines. It is too early to determine just what effect this may have in the future on Canadian Pacific fortunes; there is a certain factor of uncertainty in the situation. One doubts, however, whether the degree of this uncertainty is as great as is that recognized to exist in the United States as a consequence of the agitation against the railroads now being conducted by such leaders of radical thought as Brookhart, Shipstead, La-Follette, Capper and others.

Certain Elements of Difference

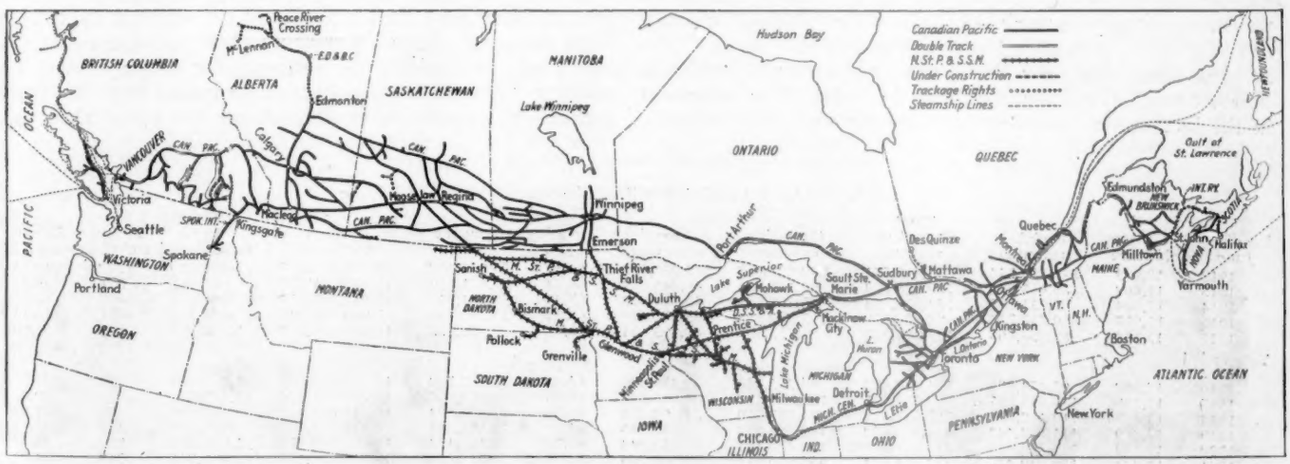
The Canadian Pacific differs essentially from any railroad in the United States that might properly be compared with it. The outstanding difference is what may well be termed the all-inclusive character of the Canadian Pacific system. First and foremost, unlike any other system on the continent except the Canadian National Railways, it operates lines extending from the Atlantic to the Pacific. Second, it operates a large fleet of ocean and coastal steamship lines from which it derives substantial net earnings. Third, it operates all its auxiliary services itself, these including its own parlor and sleeping cars, telegraph lines, news services, etc., and also a large group of hotels, from which services, as a whole, it receives sizeable net revenues.

Looking at the general situation from a slightly different angle, it might be said that three things stand out in Canadian Pacific activities. One is the widespread nature of these activities. Another is the manner in which the system's work has been conducted and its growth guided, particular reference being made to the system's conservative financing over a long term of years and the way in particular in which the C. P. R. seems neither to have over-extended itself in its expansion nor to have failed to carry through with a measurable degree of success any of the work which it has undertaken. The third feature is Canadian Pacific morale—a factor which the Canadian Pacific succeeded notably in maintaining during the war and in the eventful period which has since intervened. All these factors are interrelated and are of much more than academic importance. It is, of course, a fact that the Canadian Pacific has had its difficulties in the post-war deflation period. It is not by chance, however, that its difficulties seem to have been measurably less than those of its neighbors, either in Canada or the United States.

SELECTED ITEMS FROM C. P. R. INCOME STATEMENT

	1922	1921
Gross earnings	$186,675,036	$193,021,854
Working expenses (including all taxes)	150,373,345	158,821,114
Net earnings	$36,301,691	$34,201,740
Deduct fixed charges	13,348,906	11,519,072
Surplus	$22,952,785	$22,682,668
Contribution to pension fund	500,000	500,000
	$22,452,785	$22,182,668
Dividends on preference stock, 4 per cent	3,227,277	3,227,277
Dividends on ordinary stock, 7 per cent	18,200,000	18,200,000
Total dividends	21,427,276	21,427,276
Net surplus for year	$1,025,508	$755,391

Dividends on the ordinary stock total 10 per cent, the other 3 per cent being paid from special income. The latter includes income from investments, interest and dividends, earnngs of the steamship lines and of the telegraph and news department, hotels, etc. It amounted in both years to about $11,000,000, the details being given in the excerpts from the annual report appearing elsewhere in this issue.



The Canadian Pacific

Simple Capital Structure

The Canadian Pacific financial structure is quite different from that of the average American railroad. Its balance

sheet as of December 31, 1922, shows that its capitalization is made up of $253,229,866 of four per cent consolidated debenture stock; $52,000,000 six per cent note certificates maturing in 1924, and which it is planned to pay off in July of the present year; $3,650,000 of Algoona Branch five per cent, first mortgage bonds; $80,681,921 four per cent preference stock and $260,000,000 ordinary stock. The striking feature is the simplicity of the capital structure. The larger part of what in the United States would be termed the bonded debt is in the form of the 4 per cent debenture stock. No United States railroad company has a counterpart of this, which is hardly a stock at all but rather a bond in perpetuity; in other words, without maturity.

The ordinary, or common, stock receives dividends at a rate of 10 per cent, 7 being paid from railway operations and the remaining 3 from special income, namely, the income from investments, the net return from the steamship services and that from the news, telegraph and hotel services, etc. This special income for the past three years has approximated $11,000,000 annually. Fixed charges and the dividends on the preference stock are paid from the railroad income. The Canadian Pacific general balance sheet shows as of December 31, 1922, four per cent debenture stock outstanding in the amount of $253,229,866 as compared with an amount of $238,206,432 as of December 31, 1921, and as of December 31, 1920, of $216,284,882. These increases have been due to the fact that during 1921 the company sold in London £4,800,000 and in New York $25,000,000 of the stock and in 1922, an additional £3,087,007 in London and $2,000,000 in New York. The debenture stock is quoted in New York at present at about 77.

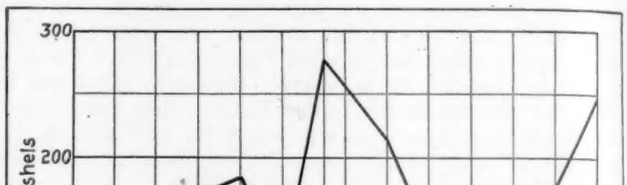
Increase of $2,099,951 in Net After Taxes

In 1922, according to the annual report issued early in the present week, the Canadian Pacific experienced a somewhat more satisfactory year than in 1921, rather poor conditions in the early part of the year being more than compensated for by the unusually heavy movement of grain in October and the latter part of the year generally. The final result, as compared with 1921, was an increase of $2,099,951 in the item of net earnings or net after taxes. The surplus remaining after the 7 per cent ordinary dividends in 1922 was $270,117 greater than in 1921. The difference in the increase in net after taxes and in surplus after dividends was due to the increase in fixed charges resulting from the increase in the amount of 4 per cent debenture stock outstanding, which feature has already been mentioned.

The earnings statement shows that the company had smaller gross earnings in 1922 than in 1921, the 1922 figure being $186,675,036, and in 1921, $193,021,854. The larger part of this decrease was in passenger train revenue. The freight revenues were about the same in both years, namely, in 1922, $128,918,137 and in 1921, $128,849,446. The road, however, carried much more freight traffic in 1922 than in 1921, the figures showing an increase of approximately 4,000,000 revenue tons and of over 2,000,000,000 revenue ton-miles. The reason that this addition in traffic was not reflected in increased freight earnings was due to a decrease of about 16 per cent in the earnings per ton-mile, the earnings per ton per mile in 1922 being 0.99 cents as compared with 1.19 cents in 1921. This decrease in ton-mile revenue is ascribed principally to the reduction in rates on grain to Fort William under what is known as the "Crow's Nest Agreement."

No Shopmen's Strike

The decrease in revenues was roughly $6,400,000. The decrease in expenses, however, was about $8,500,000. In



C. P. R. Grain Movement

1922 the C. P. R. operated at a ratio (the figures include taxes) of 80.55. This was an improvement as against the ratio of 82.28 in 1921. It is worth noting that prior to the war the operating ratio used to be kept as low as 65, which goes to show that the C. P. R. is not without its troubles from the standpoint of increasing costs and from that of a desire of the agricultural interests for lower rates. The decrease in expenses in 1922 as compared with 1921 was general, transportation expenses being decreased about $2,500,000; maintenance-of-way, about $1,500,000 and maintenance of equipment, about $3,500,000. In connection with the last named figure, it will be remembered that the Canadian roads had no shopmen's strike which in the United States expanded maintenance of equipment expenses rather badly.

The Canadian Pacific, like all the roads on the continent, had its difficulties with deferred car repairs. This never was a very serious situation on the C. P. R., however. Its per cent of bad order cars has never gone much above 5 per cent and at present the figure is nearer 2 per cent—an

CANADIAN PACIFIC OPERATING RESULTS 1912-1922

Year ended June 30	Mileage	Freight revenue	Total Operating revenue	Operating expenses	Net earnings after taxes	Operating ratio	Revenue tons	Revenue ton miles	Revenue tons per mile of road	Revenue train load	Revenue car load
1912	10,983	$79,833,734	$123,319,541	$80,021,298	$43,298,243	64.89	25,940,238	10,391,650,965	945,319	372	18.30
1913	11,602	89,655,223	139,395,700	93,149,826	46,245,874	66.82	29,471,814	11,470,001,871	989,081	381	19.34
1914	12,044	81,135,295	129,814,824	87,388,896	42,425,928	67.32	27,801,217	10,821,748,859	896,470	407	20.15
1915	12,917	60,737,737	98,865,210	65,290,582	33,574,628	66.04	21,490,596	7,940,151,342	625,338	411	19.13
1916	12,994	89,654,405	129,481,886	80,255,965	49,225,921	61.98	29,276,872	14,057,685,773	1,070,068	503	22.90
Year ended Dec. 31											
1916	12,989	96,454,896	139,729,687	89,253,188	50,476,499	63.88	30,168,798	14,931,739,090	1,133,343	519	22.87
1917	13,389	103,635,795	152,389,335	105,843,317	46,546,018	69.46	31,198,685	14,882,991,224	1,129,908	539	23.77
1918	13,389	110,187,288	157,537,698	123,035,310	34,502,388	78.10	29,856,694	13,014,665,922	991,680	530	23.90
1919	13,389	111,064,442	176,929,060	143,996,024	32,933,036	81.39	25,102,821	11,121,322,012	840,928	498	22.08
1920	13,402	145,303,400	216,641,349	183,488,305	33,153,044	84.70	30,160,134	13,994,508,975	1,066,401	529	23.44
1921	13,444	128,849,446	193,021,854	158,820,114	34,201,740	82.28	23,710,606	10,811,087,106	818,743	519	24.21
1922	13,536	128,918,137	186,675,036	150,373,345	36,301,691	80.55	27,744,586	12,977,400,058	976,479	534	24.53

equipment condition that, on the whole, sounds almost too good to be true when regarded in the light of conditions on practically all other roads.

Heavy Grain Movement

The Canadian Pacific in 1922 moved 245,481,731 bu. of grain. In 1921 it moved only 175,506,119 bu. The 1922 traffic was the greatest in the company's history with the exception of that in the years ended June 30 and December 31, 1916, in which years the grain movement totaled 276,788,209 bu. and 256,109,690 bu. respectively. The company started the year 1922 poorly, the revival of business apparently being somewhat delayed in showing its effect in Canada. At any rate, up to September 30, gross earnings in 1922 were $11,560,850 behind 1921. Unfortunately, the Canadian Pacific report does not give a classified statement of commodities carried, so it is not possible to tell what proportion grain makes up of the system's total tonnage. That and the percentage of total revenues derived from grain would make interesting statistical information. There is no question but that they are large.

The great part of the grain traffic originates in that enormous agricultural area lying to the west and northwest of Winnipeg. Just how important grain is to the Canadian Pacific is instanced by the fact that long prior to the time the grain movement begins, cars are moved into this area and stored to the extent that when the grain begins to move —about August 15 to September 15—there will be on hand in the grain country from 12,000 to 15,000 cars. The grain movement centers on Winnipeg, being brought to that place over the group of lines which meet at that point. At Winnipeg the C. P. R. has one of the best railroad terminals in the world; the most important unit is Transcona yard, a hump yard of 7,000 cars capacity. From Winnipeg east, the C. P. R. has a double track line to the head of the lakes at Fort William and Port Arthur, this line forming one of the most important links in the entire Canadian Pacific system. At Fort William and Port Arthur there is grain elevator capacity aggregating 56,000,000 bu., served, of course, by both the C. P. R. and the Canadian National. From these points the greater part of the movement to the east is by water, although after the lake season closes, some grain may be handled east over the C. P. R.'s line north of Lake Superior, a line, incidentally somewhat uneconomical to operate, in the winter months particularly, and generally very much less in importance compared to the Fort William-Winnipeg link.

The peak of the 1922 grain movement came in October and was of record-breaking proportions. The loaded cars handled east from Winnipeg daily during the month averaged 1,229, of which 90 per cent was grain. The best previous car movement for October was in 1915 and the daily average for that month was 1,061. In November, 1922 the figure was 1,067, this figure, however, was exceeded by the 1915 November daily average of 1,106. The grain movement ends usually at the end of the lake season, about Dec. 15.

Ample Car Supply

It was estimated that about 40 per cent of the 1922 Canadian grain moved through American ports. The boats loading at Fort William and Port Arthur carry grain in large volume to Buffalo. Some is carried by boat to Montreal for transshipment at that point. Sizeable tonnage moves to Port McNicoll, Ont., on Georgian Bay and from thence to Montreal by rail. Montreal is a grain port of growing importance. At present it has an elevator capacity of about 8,500,000 bu., the elevators being operated by the Harbor Commission which recently has received authority for considerable extension of the present facilities. The C. P. R. and the Grand Trunk together deliver at Montreal in the grain season about 500 cars daily.

An interesting feature in connection with the grain traffic as handled by the C. P. R. is the fact that the system seems to have been troubled by car shortages to much less degree than was the case with the grain carrying lines to the south of it. The C. P. R. did have to report a car shortage for a time during its 1922 grain season; in its manner of handling the grain business, however, it has three important assets—ample facilities, a good organization and an ample car supply. Car supply is a question that is often arising between the C. P. R. and the United States lines. In February of this year, for example, the C. P. R. had no less than 14,700 of its cars in the United States, whereas at the same time it had 4,200 U. S. cars on its own rails, a net excess, therefore, of 10,500 C. P. R. cars in United States.

Mr. Kruttschnitt Shows Increase in Railway Efficiency

JULIUS KRUTTSCHNITT, chairman of the executive committee of the Southern Pacific Company, has addressed a letter to Senator Couzens of Michigan, replying to his charge that the American railroads had not increased in efficiency in the last 18 years and that they were now seeking to make savings primarily by wage reductions. Mr. Kruttschnitt asserts that Senator Couzens' assumption that the chief railway economy has been reduced wages, is mistaken, and that out of a reduction of approximately $1,000,000,000 a year in labor cost of railway operation only about $350,000,000 represents decreased wages. The balance, almost two-thirds, has been the result of efficiency and economy of operation.

In 1922 the railroads carried a traffic not greatly less than that of 1920. "To do this they employed an average of 1,645,237 employees in 1922, as against 2,012,600 in 1920," Mr. Kruttschnitt says. Senator Couzens' statement that "for 18 years there has been no improvement in locomotive performance," is declared to be erroneous. The number of train miles per thousand pounds of tractive effort is not the measure of increase in transportation efficiency, Mr. Kruttschnitt points out. The real measure is to be found in the fact that the average number of revenue tons per train increased from 310 tons to 652 tons, or 110 per cent. "By means of this increase in efficiency of handling trains the railways secured an increase of 110 per cent in ton-miles with an increase of only 20 per cent in train miles."

Stating the matter in another way Mr. Kruttschnitt shows that during the past 18 years the increase in power of each locomotive, plus the increase in the number of locomotives, produced an increase of 97 per cent in the aggregate power of freight locomotives. "With only 97 per cent increase in power they moved 139 per cent more revenue ton-miles," Mr. Kruttschnitt asserts.

Another gage of the increase in efficiency of American railroads is to be found in the amount of transportation produced for every $100 of investment in railroad property. In 1890 for every $100 of investment the railroads carried 983 tons of freight one mile, and 153 passengers one mile. In 1920 for every $100 of investment they carried 2,063 tons of freight one mile, and 231 passengers one mile, an increase of 110 per cent in freight, and 50 per cent in passenger service.

Mr. Kruttschnitt said in part:

In the eighteen years, 1903 to 1920, the average tractive power of locomotives increased from 21,781 pounds to 36,365 pounds, which is an increase of 67 per cent. The number of freight train miles per freight locomotive during the same period increased from 20,685 to 21,061, or about 2 per cent, instead of a decrease of nearly 20 per cent as might be inferred from your statement. By "net ton-miles" I assume you refer to revenue ton-miles.

The number of revenue ton-miles during the same period increased from 173 billions to 413 billions, or about 139 per cent. The number of ton-miles handled per 1,000 pounds of tractive effort, instead of being "in 1920 exactly the same as it was in 1903," according to your statement, in fact increased from 312,500 to 378,200—an increase of 21 per cent. Furthermore, the average train loading, or number of revenue tons per train, increased from 310 tons to 652 tons, which is an increase of 110 per cent.

It is impossible to use any such measures of traffic performance, without due consideration to the increased size of cars and the amount of traffic hauled. It becomes clear, therefore, that the so-called "efficiency" factors utilized by you turn out to be very largely an indication of changes in railway traffic.

The striking fact in the foregoing comparisons is the increase in train load. By means of this increase in efficiency of loading and handling trains, the railways secured an increase of 110 per cent in ton-miles with an increase of only 20 per cent in train miles. The freight train mile at the end of the period was a very different unit of operation from what it was at the beginning of the period, and any statement that attempts to indicate railway efficiency in terms of train-miles per locomotive, without making allowance for this great difference in the train-mile unit, omits from consideration this most important and significant factor in efficiency of loading and handling trains. But even when measured in terms of the larger trains of 1920, which is, of course, an essentially misleading and unfair measure, the greater efficiency with which freight locomotives were handled in that year produced two per cent more train-miles per locomotive than in terms of the much smaller trains of 1903.

All these comparisons are between the year 1903 and the year 1920. The latter year, however, was one of unusually heavy freight traffic. In 1921 the freight traffic fell off about 25 per cent, resulting in a marked decrease in number of train-miles per locomotive, in number of ton-miles per 1,000 pounds of tractive effort, and also in average train load. These factors, which you offer as measures of tractive efficiency, are obviously so dependent upon the amount of traffic offered to the railways that they all declined between 1920 and 1921, when the traffic fell off. Conversely, in 1922 all the factors again increased by about 10 per cent, because freight traffic increased about 10 per cent over 1921. Manifestly, therefore, the standards you apply in measuring tractive efficiency are not sound and your conclusions are not justified.

One of the remarkable achievements of the railways during the 18 years was the increase in loading per freight train. The freight train is the unit of cost of railway operation, while the ton-mile is the unit of railway revenue. Any increase in the number of units of revenue which is greater than the increase in the number of units of cost indicates progress not only in railway efficiency of operation but also in economy of operation.

The same increase in efficiency may be stated in another way. The increase in the power of each locomotive plus the increase in total number of locomotives, brought about an increase of 97 per cent in the aggregate power of the freight locomotives of the country. With only a 97 per cent increase in power they moved 139 per cent more ton-miles.

In 1917 the railroads voluntarily constituted the Car Service Division, in order that the equipment of the country might produce the maximum amount of transportation possible from existing facilities. I think there is little doubt in the mind of any railway executive that the intensive utilization of equipment has permanently moved onto higher standards. Under any normal condition of equipment and motive power, tons per loaded car, car-miles per day, and car loadings per week will tend toward higher figures whenever there is sufficient traffic.

You present some computations designed to show what theoretical economies in railway operation would be possible if all the carriers displayed the same efficiency in the factors of miles per locomotive per day and pounds of coal consumed per 1,000 gross ton-miles as the 10 carriers which in each case have the best records.

Take the factor of miles per locomotive day. Of the 10 railways of Class I which attained the greatest number of miles per locomotive day in 1922, eight are comparatively small lines, whose traffic conditions are neither representative nor significant. The total operated mileage of the entire group was 12,921 miles, or less than 6 per cent of the mileage operated by all Class I carriers. The average daily mileage secured by these 10 lines from their freight locomotives in 1922 was 78.6 miles. Why assume that all the lines should measure up to those few small lines, which because of the character of their traffic, the nature of the topography through they they operate, and other factors, show unusually favorable results? It is inevitable that there must be differences in results in accordance with the differences in the difficulties of operation which confront the several managements. This is true in every business. Why not deal with rational and practical rather than theoretical principles?

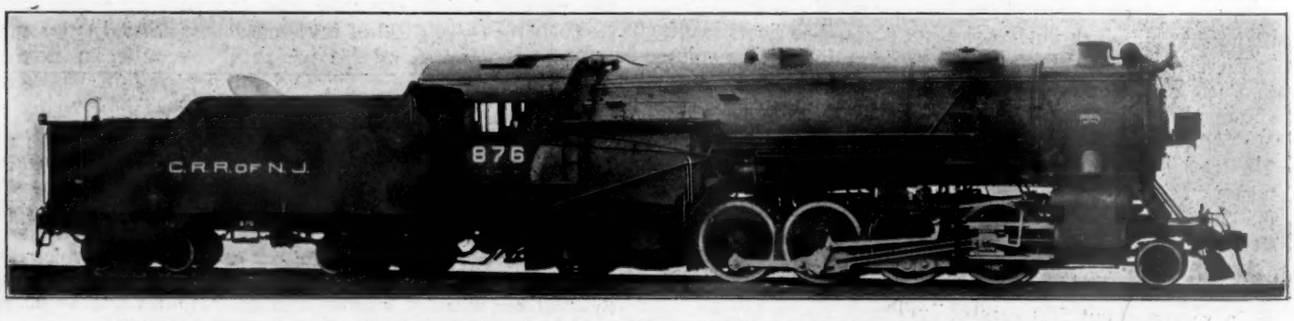
Similarly, you compare the results attained from the consumption of coal on the 10 railways showing the lowest consumption per 1,000 gross ton-miles with the average results for all railways, and compute a large theoretical saving in coal on that basis.

The 10 railways that in 1922 showed the lowest averages of coal consumption per 1,000 gross ton-miles are all small lines. The aggregate consumption of coal in train service by these 10 lines in 1922 was less than 1 per cent of the total coal consumed by all railways of Class I in train service in that year. Their operated mileage was 3,530 miles or only 1½ per cent of the mileage operated by all Class I carriers. It is not possible to regard these 10 railways as representative lines.

Here again you utterly fail to take into account the different character of operating conditions on railways in all parts of the United States. You make no allowance for differences in grades, curves, density of population and of traffic, weather conditions, distances between terminals, percentage of branch mileage and many other operating factors that influence the results.

As you yourself say, the fact that railway executives were not afforded the opportunity to keep the railroads ahead of the development of the country is "old stuff." For 10 years the railway executives have been trying to impress this fact upon the country. But the remedy is not to be found in additional legislation nor ceaseless agitation. It is to be found by the very simple policy of permitting the railroads to earn a reasonable return, and thus enable them to put at the service of the public adequate capital, and in protecting the freedom of initiative of trained railway management.

You have spoken also of Henry Ford and certain methods suggested by him for effecting economy on the railroads and elsewhere. Mr. Ford's success has been in a business untrammeled by restrictive legislation and one in which he has been free to use his powers of management, his initiative, and his resources in the promotion of his business according to his own judgment. He is, of course, a novice in the business of running a railroad and his conclusions as to equipment, which you commend, are at variance with the experience and the judgment of those who have spent their lives in the study of the subject.



Mikado Type for the Central Railroad of New Jersey, Built by the American Locomotive Company

L. W. Baldwin President of the Missouri Pacific

Succeeds B. F. Bush Who Becomes Chairman of Board After 12 Years As President

L. W. BALDWIN, operating vice-president of the Illinois Central, has been elected president of the Missouri Pacific, succeeding B. F. Bush, who has been elected chairman of the board in place of Harry Bronner. Mr. Bush had been president of the Missiouri Pacific for about 12 years. The presidency of the Missouri Pacific during that time imposed an exceedingly arduous task, that of reviving to full effectiveness a property which went down with the wreck of the Gould scheme for a transcontinental system. The circumstances under which restorative measures have been administered and the limitations on the thoroughness of the treatment have militated against a complete cure.

L. W. Baldwin

B. F. Bush

Much still remains to be done. It is fienerally conceded, however, that Mr. Bush accomplished much with the means at his disposal during the 12 years since his election to the presidency. It is true that his service as president was interrupted during government control by his administration of the affairs of the Southwestern region of the United States Railroad Administration as regional director, but the fact that the Missouri Pacific was included among the roads under his direction enabled him to maintain general supervision of its affairs during that time.

The Missouri Pacific is unquestionably in much better condition today than it was in May, 1911, when Mr. Bush was made president. The system, however, occupies a highly competitive territory, in which several of the roads have recently manifested increasing vivility, as evidenced by the adoption of aggressive operating and traffic policies which have greatly intensified the rivalry for patronage. There is ample opportunity, therefore, for the development of operating measures designed to provide a service that will attract more business. In view of this, Mr. Baldwin's selection as the new president of the Missouri Pacific is a happy one, for he is fundamentally a master of transportation. As chief operating officer of one of the most progressive roads in the country he has been afforded ample opportunity for the exercise of an aggressive policy in operating matters which has been conducive of excellent results. If any change in policy is to follow Mr. Baldwin's succession to the presidency of the Missouri Pacific, we would venture that it will concern the operating department.

Mr. Baldwin is fundamentally dynamic in his makeup. He induces a spirit of energetic action in his subordinates which produces results. While habitually inclined to deal directly with many members of his staff, he has been eminently successful in perfecting a smooth-working organization, unusually free from friction generated by inter-department jealousies.

Like his predecessor, Mr. Baldwin is an engineer by education and early railway experience. This should be of considerable advantage to the Missouri Pacific in the prosecution of such improvement programs as it is enabled to carry out under his administration. There is a need for considerable intensive development of the property, particularly as to classification yards, engine terminals, etc.

Lewis Warrington Baldwin was born on February 26, 1875, at Waterbury, Md., and was educated at Lehigh University, entering the employ of the Illinois Central immediately after graduation in 1896. He was engaged first in construction, occupying in turn the positions of chainman, rodman and assistant engineer until June, 1898, when he was transferred for a short time to the maintenance-of-way department. After another 15 months on location and con-

struction, he again entered maintenance-of-way work in January, 1900, as supervisor of track. A year later he was made roadmaster and in 1904 trainmaster, occupying that initial operating position for 18 months before he was promoted to superintendent. From May, 1910, to April, 1913, he served as engineer maintenance-of-way, but his leaning toward transportation was so strong that he gladly suffered a reduction of rank in order to effect a return to the operating department, giving up a system position to take another division superintendency. However, promotion followed quickly, for in two years he was advanced to general superintendent at New Orleans and a year later to vice-president and general manager of the Illinois Central's subsidiary, the Central of Georgia. Like Mr. Bush, Mr. Baldwin served as a regional director during government control. In January, 1918, when President Markham of the Illinois Central was appointed director of the Southern region, he selected Mr. Baldwin for the position of assistant regional director. Later they were both transferred to the newly created Allegheny region, and when Mr. Markham retired to resume his duties as president of the Illinois Central in October, 1919, Mr. Baldwin succeeded him as director of the Allegheny region, a position he occupied until the end of federal control, when he was elected operating vice-president of the Illinois Central.

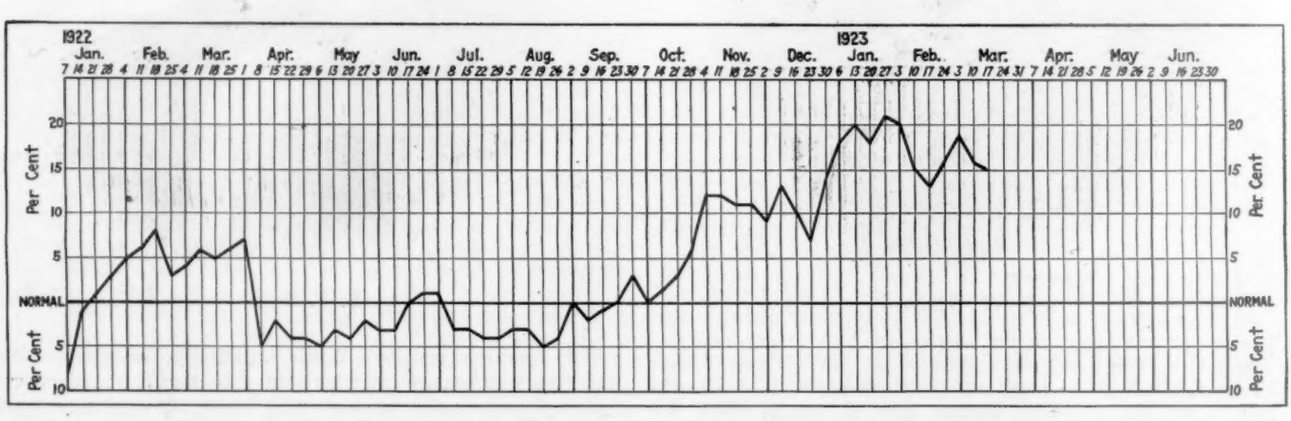
Car Loading 15 to 20 Per Cent Above Five Year Average

THE WEEKLY FIGURE of revenue car loadings compiled by the Car Service Division of the American Railway Association is recognized as one of the best indices of the current volume of railway traffic and as such one of the most useful units relating to the volume of current business activity generally. Its special value as a statistical unit lies in the fact that the figures are available promptly, usually being made public inside of two weeks after the end of the week to which they refer. The statistics relating to net or revenue ton-miles, gross and net earnings, etc.—otherwise of equal or greater value—are on the contrary, not available for at least four or more weeks after the end of the month to which they relate.

Special interest attaches to the car loading figures at present because for the past several weeks they have been running much in excess of any previous figures for this time of year. With this fact in mind, the *Railway Age* has made an analysis of the figures with a view to ascertaining just how great has been the amount of the increase over the previous figures. The interesting fact is developed that since the first of the year revenue car loadings have averaged from 15 to 20 per cent over the average for the early weeks of the year.

The chart shows pointedly the manner in which railway traffic has expanded since the end of the coal strike last September. The weekly car loading figures have been compiled by the Car Service Division back to 1918. To plot the curve shown, the following procedure was adopted. First, the figures for the corresponding weeks in each of the five years, 1918 to 1922, were averaged to secure a figure which was regarded as the normal loadings for the week in question. Thus for the week ended February 24, 1923, it was necessary to add the figures for the week in each of the five years which contained the Washington's birthday holiday. The result was divided by five to show an average for that particular week. The point plotted on the chart for the week ended February 24, 1923—namely, 16 per cent above normal—represents the proportion which the loadings for that week bear to the average for the same week of the five years. The points plotted for the other weeks were figured in similar fashion. For the weeks in the years 1922 and 1923 alike the same base is used; namely, the average for each of the corresponding weeks of the five years from 1918 to 1922 inclusive.

It is believed that this chart will be of supplementary value to the chart on which are plotted the actual car loading figures. Its value lies in the fact that in it have been averaged out the seasonal variations and also the dips due to the holidays which stand out so decisively in a chart on which are plotted the actual loadings. The chart, it is true, is not absolutely correct statistically, the principal reason for which is that it is not entirely possible to iron out certain abnormal situations. Thus, the outlaw switchmen's strike of April, 1920, reduced loadings to an abnormal extent with the result that the inclusion in the averages of the weeks of 1920 showing this reduction will slightly expand the percentage for the corresponding weeks in 1922 or 1923. It is not possible also to work out a factor to cover the increase in volume of traffic which may result from the country's industrial expansion generally over a period of years. However, examination of the chart will show that it presents a generally accurate picture. Proof of that is contained in the sharp dip in the curve at the point showing the loadings at the beginning of April, 1922, when the coal strike became effective and similarly on July 1, when the railway shopmen's strike started. The chart, in spite of certain faults which it may have, should prove of interest and serve a useful purpose in picturing traffic conditions.



Freight Car Loadings Per Cent of Normal—Per Cent for Each Week Figured on Basis of Average for Corresponding Weeks, 1918 to 1922, Inclusive

The Problem of Railroad Transportation*

You Cannot Beat and Starve Your Horse and Have Him Haul the Load

By James C. Davis
Director General of Railroads

THE VIEWS contained in this paper are wholly personal, not connected with any official responsibility, and represent no one but myself.

The greatest problem of vital interest to the American people, the one having the most direct bearing upon every commercial and agricultural investment, is the question of railroad transportation. Unless this controlling factor in modern civilization functions, to the end that our people receive efficient transportation service, at such rates as will permit a free interchange in the way of both passenger and freight movements, we can have no permanent or wide spread prosperity.

In Iowa the farming element is peculiarly dependent for its prosperity upon the railroads, and the railroads are peculiarly dependent upon farm products for net earnings.

With these two great interests so interdependent, there should exist between the farmers and the railroads the most cordial co-operation. The complexities involved in railroad operation, their value, the true amount of investment in this property, and their actual earnings, have not been the subject of impartial and detailed study. The railroad question has been approached by the people as a political rather than a very complex economic question. A spirit of antagonism has been greatly fostered by the distribution of misinformation. The railroads for more than 30 years have been subject to ever-increasing governmental control.

From 1870 to perhaps 1916 or 1917, covering a period of less than 50 years, there has been constructed the present system of national railway transportation, undoubtedly the greatest and most efficient plant of its kind the world has ever produced. Since 1917 more miles of railroad have been abandoned than have been constructed. This reduction in mileage can only be accounted for by the fact that railroad earnings and conditions have not justified further capital investments. This showing does not indicate a healthy condition of this industry.

Government Control

In the beginning of the period of increased railroad building, the construction of railroads and the investment of private capital in them was supported by the public in every possible way. Land grants were made by the federal government, and aid was liberally voted by states, counties, townships and municipalities. The railroads were recognized as private property, and operated as such, without appreciable effort at government control. Of course, under these conditions, exploitation and indefensible abuses became prevalent. There was much stock manipulation; frequent and reprehensible discrimination, not only as between communities, but as between individuals; secret rebates, in the way of freight charges, were granted favored interests, and the issuance of free transportation to public officers and influential individuals became a public scandal.

In 1876 the Supreme Court of the United States, in approving the Granger legislation, sustained state legislation regulating railroads and public elevators and warehouses. These decisions started an avalanche of state and national legislation in the matter of railroad regulation and control, which continued down to the commencement of the World War. Because of real or fancied abuses, there was a complete revulsion of public opinion in regard to railroad corporations.

In 1887 Congress enacted the Interstate Commerce Act, which by frequent amendments has been enlarged and extended. Legislatures, treating the highly complicated question of transportation as a political issue, without any sort of economic study of the problem, regulated the details of operation without regard to the possibility of the carriers complying with same, or the effect such legislation would have upon their net revenues. The two-cent passenger fare law, passed in very sparsely settled states, full-crew laws, average speed for stock trains, are fair examples of the legislation of this character.

Every one of these thousands of legislative enactments was for the benefit either of the public, the patrons of the railroads, or of the employees; all of them tended to increase operating expenses or reduce revenues, and, until the enactment of the present Transportation Act, there was not a line in any of this legislation looking to the protection of the owners of the property. For many years the carriers successfully met this rising tide of operating expenses and diminished showing of net earnings by efficiency in operation, largely by reducing grades and curves, laying heavier rail, and purchasing locomotives with greater tractive power and freight cars with larger tonnage capacity. By 1917 this saving had reached its limit. Many of the roads were suffering from deferred maintenance, and large capital expenditures were in demand, for increased equipment, better terminals, and improved shop machinery and other facilities.

The Interstate Commerce Commission had refused what, in the light of subsequent events, would seem to have been reasonable and necessary increases in freight rates; many thoughtful experts in railroad operation were apprehensive of a breakdown of the national system of railroad transportation, and government ownership began to be considered as perhaps more than a possibility.

Federal Operation

The World War caused a truce in the railroad situation. * * * Federal control was a necessary incident to a successful prosecution of the war. Federal control stabilized the income of the carriers, so that without default they could meet their liabilities in the way of paying current obligations for interest charges and usual stock dividends. There would have been a sharp dislocation in the financial situation of the railroads, due wholly to war conditions, independent of whether the government had taken them over or not.

Here the speaker discussed several phases of government operation, and continued:

The financial condition of the carriers at the end of federal operation arose from causes for which the carriers were not responsible, and over which they exercised no authority. I cannot at this time go into the details of federal control. There will always be differences of opinion as to whether or not the government, having the powers, should have raised

*Abstract of an address before the Prairie Club, Des Moines, Ia., on February 24, 1923.

rates as operating expenses increased. Personally, I have no criticisms to offer. War conditions made it difficult to determine the proper course to pursue. The government adopted a plan whereby operating deficits should be borne as a general war expense. This, in the end, made the reconstruction period more difficult for the carriers.

During federal control the government undoubtedly did the best it could so far as hard and fast legislative enactment was concerned. An effort was made not only to preserve the physical value and condition of the carriers' property, but also to maintain that elusive and uncertain element designated as "going value." Just and perhaps generous provisions were made for compensation for the use of the property; carefully prepared plans for maintenance were put in force; conditions were provided for the advance of funds to meet pressing obligations to those carriers which were not in a situation to promptly pay, and large sums were expended for additions and betterments.

The financial misfortunes of federal control were not borne solely by the carriers. When the final page of the history of this period is written, it will be found that the government, for its share in the venture, lost in the neighborhood of $1,800,000,000. This sum includes operating losses, payments during the guaranty period, payments to deficit short lines, and all incidental losses directly the result of federal control.

Transportation Act, 1920

An ideal transportation system could be described as one which furnishes prompt, adequate, and efficient service to the public, at rates that are reasonable, and will permit that free exchange of commodities essential to a prosperous commercial life, pay all employees sufficient compensation to live and rear their families under civilized standards of living, and return to the owners of the property held and used in the service of transportation a fair compensation, based on the value of such property.

This result is the aim and purpose of the Transportation Act of 1920. Heretofore Congress and state legislatures have overlooked the protection of the many individuals who for full value are the real owners of the railroads of this country. The latest reliable data indicate that the stockholders in railroads aggregate about 768,000 In one great company, the Pennsylvania Railroad, the number is 140,000. If you add to this number of stockholders the bondholders, you have an aggregate of separate holders, corporate and individual, equaling perhaps the number of employees in the service, which is something over 2,000,000. It is an interesting fact that the number of small investors in railroad securities has very substantially increased in the last few years. It is entirely possible that large holders of these securities, anticipating a depression of railroad obligations, by reason of the political rather than economic consideration which this property is receiving from the state and federal governments, have unloaded on a more confiding and trusting general public.

The reprehensible acts in railroad operation and manipulation occurred many years ago. The experience of the abuses has resulted in such legislation as effectively prevents a repetition of this wrong-doing. There is in this country a new set of owners, who have paid full value for their investment, and acts committed long ago, by persons for whom the present owners are not responsible, should permit, as to most of these matters, a plea of the statute of limitations.

The Supreme Court, in construing the protection of private rights in railroad property, in the Minnesota Rate Cases, laid down these simple and easily understood rules: "What the company (railroad) is entitled to demand, in order that it may have just compensation, is a fair return upon the reasonable value of the property at the time it is being used for the public. In ascertaining the present value we are not limited to the consideration of the amount of the actual investment. If that has been reckless or improvident, losses may be sustained which the community does not underwrite. As the company may not be protected in its actual investment, if the value of its property be plainly less, so the making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost."

The provision of Section 15a of the Interstate Commerce Act, as amended by the Transportation Act, is drawn with great care, so that it conforms to the foregoing rules, which must be recognized by all good citizens as the law of the land.

The act also contemplates a plan of consolidation for the purpose of equalizing the earning capacity of the roads. If such a plan could be perfected, it would remedy perhaps the most serious defect in the present system of government control, whereby, under a rigid schedule of rates, net earnings are inequitably distributed, roads favorably located enjoying excessive returns.

The rate and wage provisions in the Transportation Act effectively take from the carriers all authority over rates. The taking over of these vast property interests cannot be accomplished without some responsibility on the part of the government, in the way of assurances to the owners of the property that they will receive, as stated by the Supreme Court: "A fair return upon the reasonable value of the property at the time it is being used for the public."

Section 15a of the act, although most bitterly assailed by critics of this legislation, simply attempts to announce rules wholly consistent not only with the plain language of the Constitution but with the decisions of the courts.

In fixing of rates, the commission is directed to: "Prescribe just and reasonable rates * * * so that carriers as a whole will earn an aggregate annual net railway operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation."

And, further, the law provides that for the two years beginning March 1, 1920, 5½ per cent on such value shall be taken as a fair return. Since the expiration of the two years the Commission has fixed the rate of return at 5¾ per cent. Provision is also made for the return to the government of excess earnings of any carrier over the amount which the act provides shall be deemed reasonable.

This provision, attempting to provide reasonable compensation for the owners of the property, is not in any wise a guaranty of earnings. At most, it is but a legislative expression of well recognized rules of the Constitution.

Under the provisions of this act, the net return of the railroads has been as follows: For the year 1920 there was a deficit of .08 per cent; in 1921 the net earnings were 2.95 per cent, and in 1922 4 per cent (estimated). * * * The carriers have no way to recoup themselves for the very substantial difference between what they actually earned and the fair return fixed by Congress.

Value As Fixed for Rate Making Purposes

It must always be understood that the value upon which the act provides for a fair return is not the book or investment value, nor the stock and bond value, but is, as described in the act, "upon the aggregate value of the railway property of such carriers held and used in the service of transportation."

The Interstate Commerce Commission is required from time to time to fix this aggregate value, which is, as of December 31, 1921, $19,412,201,000. The Commission, in arriving at this value, had the advantage of the details of annual reports made since 1888, and the results of the physical valuation of all the railroad property, which, under an act of Congress, has been in progress since 1913, an investigation in such detail as to have cost the carriers and the government about $85,000,000. This inquiry is now so near completion that the commission, having access to its results, may deter-

mine with some accuracy what the final valuation will be.

This finding of the commission is, therefore, the only valuation made under the form and with the sanction of law, and must be taken as the basis upon which rates are fixed, until some new valuation is arrived at. The Interstate Commerce Commission has found, upon investigation, that the net par amount of stock and bonds, not held by the railroads, but in the hands of the public, is $16,993,930,263. * * * Frequent reference, in the public discussion of railroad matters, is made to the fluctuating value of railroad stock and bonds. These values, many of them speculative, are not and cannot in any sense be made the basis of rate making. Legislation depressing rates below a fair return on the property can easily destroy the entire value of outstanding railroad investments.

Present Rates Not the Result of Transportation Act

An impartial consideration of the present rate situation should justify the conclusion that it is not in any wise the result of the Transportation Act, but is the direct result of economic conditions. It is an aftermath of the war, and, if there had been no provision such as 15a, the Interstate Commerce Commission, acting under the rule of the Constitution, guaranteeing to private property just compensation for its public use, would have had to fix rates as high or even higher than the present schedule. In reaching any sort of a fair and impartial conclusion as to why it is necessary to maintain, at least for the present, the existing schedule of rates, you cannot ignore undisputed facts, summarized as follows: When the government took over the property, it was operated so as to return reasonable net earnings; when it was returned operating results exhibited a deficit.

Surely this was what might be properly described as a profound disturbance in the financial condition of the property. A descent in three years from net earnings of nearly $1,000,000,000 to a deficit of over $2,000,000 cannot be accomplished without very grave consequences, and presents a situation which calls for some patience and forbearance on the part of the public while the carriers are working back to normal conditions. * * *

The very substantial raise in the schedule of rates made by the Interstate Commerce Commission immediately after the termination of the guaranty period succeeding federal control was necessary to take care of the increase in operating expenses in force during federal control. This increase has been and is now the cause of great dissatisfaction and protest, especially on the part of the agricultural interests, and not without reason from their standpoint. Almost immediately after the war, for reasons for which the railroads at least were not responsible, the price of farm products fell within a very short period to practically pre-war prices. Corresponding decreases were not made in other necessaries of life, and the farmer found himself in the undesirable and unfair situation of having to sell his products at greatly reduced prices, while the commodities which he was obliged to buy remained at practically war standards.

Now, it is not fair to charge the railroads with this situation. The truth of it is, they are helpless. The present rates are fixed by the government, through the agency of the Interstate Commerce Commission. The present wages are approved or fixed by the government through the Labor Board, and the carriers are between these upper and nether stones, continually grinding.

The relief from these conditions does not lie in new and drastic legislation, the effect of which will be to decrease the earnings and increase the expenses of railroad operation. The solution of the present difficulties, if the government is to continue in control of this property, should be found through those governmental agencies having jurisdiction over wages and rates. The people, through the government, have assumed this authority, and, if a fair trial is permitted, upon returning normal conditions, relief in the way of a reasonably lower standard of rates should be obtained.

Some Railroad Burdens

There is somewhat of an anomaly in the relations of the state and federal governments and the railroad companies. In 1911 the aggregate amount of taxes paid by Class I and II roads was $108,309,512, or $444 per mile. In 1921 the taxes had increased to $286,213,871, or $1,142 per mile. * * * There is an insistent and in many instances a justified demand on the part of the public for expensive non-productive capital investments, such as track elevation in cities, separation of grades in the country, and building of expensive passenger terminals. For instance, in Iowa, as I recall it, there are about 7,500 surface crossings. To separate the grades at these points of crossing would cost about $20,000 for each crossing, or a total of $150,000,000. While an investment of this character would be of inestimable public advantage, but little pecuniary saving would be afforded the carriers. The interest charges and the cost of maintenance would greatly exceed any reduction in claims for personal injuries and the cost of watchmen or mechanical safety devices. In their existing financial condition, the carriers have no credit or earnings out of which this non-productive capital investment could be made.

Again, the carriers, out of their earnings, are compelled to pay large sums in the creation and support of new and highly competitive instrumentalities of transportation.

The capital expenditures for the Panama Canal, incurred by the government up to December 31, 1921, total $355,734,673.75. A substantial contribution to this very great public expense was made by the property of the carriers, just the same as the property of any other tax-paying person or corporation, residents of this country. In 1922, 10,884,910 tons of cargo passed through the canal. Ships engaged in coastwise service via the canal carried 2,562,527 tons of this total tonnage. Practically all of this coastwise tonnage would have been hauled by the transcontinental railroads except for the canal.

During the period of federal control the government inaugurated a water service on certain inland waterways, and, is now operating steamboats and self-propelling barges on the Mississippi and Warrior rivers. The cost of the investment of the government in this service, up to May 31, 1922, was $13,988,221.71. The tariff rates charged by this government system of transportation are 20 per cent less than hauls for the same distance by the railroads. Of course, the railroads, in common with other taxpayers, made their involuntary contribution to this service.

Perhaps the most menacing source of competition, especially in less than carload freight shipments and comparatively short hauls for both freight and passengers, is the tremendous progress in the construction of good roads, and the unparalleled production and use in this country of gas power vehicles. Recent figures indicate that 84 per cent of the world's passenger cars and motor trucks, or a total of 12,357,376 of such vehicles, are owned and operated in the United States.

The federal government has appropriated, to aid in state construction of good roads, a total of $350,000,000. Each state, in its various plans for good road construction and maintenance, requires the railroads to bear their proportion of this expense.

Additional Capital Investment Required

* * * If railroads are to keep abreast of our growing population and increasing tonnage, very large capital expenditures are absolutely necessary in the immediate future. Unless railroad credit is restored and strengthened by some definite and permanent plan of government regulation and support, it is difficult to determine how several billions of

dollars, which in the next few years should be expended in improving and bringing the transportation up to a high standard of efficiency, is to be raised.

Government Ownership

It is undoubtedly true that government ownership of railroads, under present conditions, is more than a mere possibility. Private ownership is perhaps making its last stand. All over the world the doctrines of socialism, sovietism, and the exercise of governmental parental control and authority are making rapid strides. The conservative mind shrinks from the thought of public ownership of this great industry, so essential to a prosperous national existence.

If railroad ownership and operation is thrown into the maelstrom of politics, competition, especially in the way of good service, ceases; the incentive in the way of personal endeavor to succeed is gone; promotion in service would depend upon political pull rather than faithful performance of duties and controlling ability; wages and hours of service would be determined by resolutions in conventions, political or otherwise; extensions and capital investments would depend upon congressional action rather than commercial necessity, and the greatest and most efficient transportation system in the world would be deprived of that irresistible and invincible desire to succeed, born of personal ambition, which is always present in private enterprise, and wholly wanting in the ordinary routine of government service.

No greater mistake, in my judgment, could be made, nor a more expensive experiment be undertaken, than to have the government permanently take over and operate the great railroad systems of this country.

Available Remedies

Private enterprise has the benefit of the full scope of individual initiative and the exercise of an unrestricted and discretionary judgment. Railroad operation is limited by hard and fast rules not only of congressional legislation but the legislation of 48 states, acting independently, within their respective jurisdictions. The result of a failure to give efficient transportation service is in the end borne by the commercial and agricultural interests, and, as a matter of self-protection, these interests should afford a prompt and generous co-operation in obtaining a high standard of railroad operation.

If it is possible, the railroad question should be taken out of politics, and considered by the public as an economic proposition. The railroads cannot be successfully operated by resolutions or platforms of mass conventions. Again, the railroads should have a reasonable period of repose, to enable them to recover from the disorganization incident to the war. Permanent plans for extended additions and betterments require not only some years in their execution but there must be definite assurances that necessary funds will be available to make payments as the work progresses. At this time railroad credit is at a low ebb. There have been for some years no substantial offers of common stock. Whatever money has been raised has been by bond issues, and continued bond issues will destroy the market for and value of stock.

The present Transportation Act, while subject to changes that might be an improvement, presents a plan that is fair enough to be given a reasonable trial. Control and adjustment of rates is in the hands of the Interstate Commerce Commission; wages and working rules and conditions are under the jurisdiction of the Labor Board. These tribunals are composed of men who are intelligent and honorable, and are doing their best to bring about a reasonable adjustment of these two most vital issues. They have the time and opportunity to investigate these questions, which is not possible for members of a legislative body.

The return of a normal volume of tonnage, the restoration of reasonable prices, essential to reduce the cost of living to employees and the cost of maintenance to the railroads, will result in gradual and in many instances substantial reductions in operating expenses, with resulting reduction in rates for both freight and passenger service. The railroads have heretofore shown, when given a chance, great recuperative powers.

The progress which the carriers have made since the end of federal control, in the way of reducing operating expenses and a reasonable showing of net earnings, justifies an expression of confidence for the future. In 1921 there was a reduction of operating expenses over 1920 of $267,952,190. In 1922 there was a further reduction over 1921 in these expenses of $162,668,302. From an operating deficit in 1920 there were net earnings for 1921 of 2.95 per cent on the value of the property, and in 1922 these earnings increased to 4 per cent (estimated).

If the state legislatures would for awhile quit legislating on this subject, for we now have more railroad law than is necessary, and if Congress would declare a legislative moratorium on the railroad question for a reasonable period, say four or five years, the Interstate Commerce Commission and the Labor Board would satisfactorily work out a reasonable plan for readjustment in rates, which, coupled with reasonable reductions in the cost of labor and materials and supplies, would enable the railroads to again enjoy a moderate degree of prosperity, on a reduced schedule of rates that "will permit that free exchange of commodities essential to a prosperous and progressive commercial life."

The condition of the interstate carriers at this time is critical. It is the duty of all citizens to give some intelligent consideration to this important question. It is a time for plain talking and straight thinking on this subject. The American people must face the proposition of giving the railroads sufficient support to enable them to continue under private ownership or accept, as the alternative, government ownership. The carriers of the United States, if given a fair chance, under normal conditions, can and will give efficient and adequate service, at reasonable rates, lower than those that are to be found in any other country in the world.

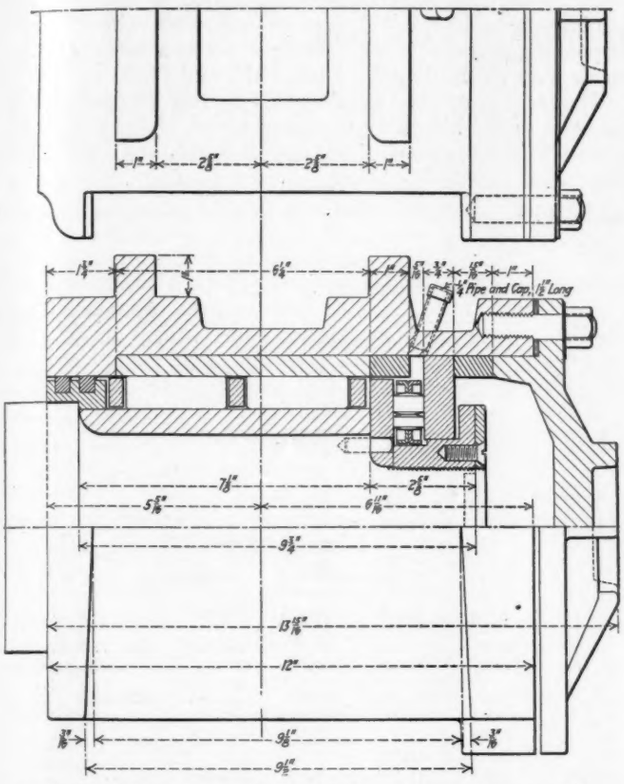
Natural laws must have an opportunity to restore order out of the chaos of war. Miracles cannot be performed by legislation. You cannot make bricks without straw. The devastating effects of the greatest calamity in the history of civilization cannot be restored over night. The painful and laborious struggle back to normal times and conditions calls for patience, patriotism, forbearance, and an abiding courage. Remember that, while the railroad is the dray horse of the nation, you cannot beat and starve your horse and have him haul the load.

Stafford Roller Bearings for Pedestal Trucks

EARLY IN JANUARY, 1923, the trucks of Michigan Central baggage car 1142 were equipped with Stafford roller bearings to replace 5-in. by 9-in. M. C. B. axles. These bearings are similar in design to those which have been in service on one set of Michigan Central freight car trucks since December, 1920. A number of detailed improvements, however, have been incorporated in the recent design of the bearings which differ considerably from those incorporated in the original design briefly described in the *Railway Age*, daily edition, of June 16, 1922, page 1460.

As originally designed the journal box consisted of three parts: The housing, a front cover and a back cover. To maintain a dust proof joint around the axle the inside vertical face of the back cover was provided with two circular grooves into which fitted corresponding projections on an oil-

and dust-proof ring, which in effect formed an extension of the inside end of the journal bushing. This cover was bolted to the housing and in order to remove the housing and bearing it was necessary to get at the nuts on the housing studs in the limited space between the back cover and the wheel. In order to remove the back cover and the dust-proof ring it was first necessary to pull the bushing off from the journal.



Sectional View—Stafford Roller Bearing and Journal Box

In the new design, with the exception of the front cover, in which no important change has been made, the housing is in one piece and the entire housing, with all contained parts, may be removed without difficulty and without disturbing the bushing on the journal. By referring to the sectional drawing of the bearing it will be seen that the inner end of the housing is closed by a ring which slips over the journal bushing and extends over the shoulder at the inner end of the journal.

Grooves cut on the outer circumference of this ring receive two snap packing rings which maintain a tight joint against the inner circumference of the housing.

In applying these journals worn axles may be used. If the journal can be turned up to receive the bushing, without going below the standard wear limit, it may be continued in use indefinitely as the axle itself is subjected to no further wear. In the case of new axles the safe carrying capacity of the car may be increased, since no reduction in size takes place in service.

The main rollers and bushings and the thrust plates and rollers are of hardened chrome steel. The bushings are pressed into the cast steel housing with a pressure of 24,000 lb. and on the journal with a pressure of 8,000 lb.

The approved lubricant for these bearings is a cylinder stock free from acids, alkalis and animal fats, semi-fluid in consistency. Instead of applying this through the opening shown in the drawing at the top of the box, a filling plug has been placed on the center line of the front cover. This prevents overfilling the box, the effect of which is not only to waste lubricant but to increase resistance in the bearing as well.

At various times during a period of service which now exceeds 25,000 miles, the bearings on a pair of Michigan Central freight car trucks have been examined to note their condition. Micrometer measurements have failed to reveal any evidence of wear, either on the rollers or the bushings. During this period, no repairs or other attention has been required by the bearings and the experience so far obtained indicates that one filling of the housings with the approved lubricant should run for two to three years. Starting resistance on straight, level track for a freight car of 122,600 lb. gross weight has been found to be four pounds per ton. For the baggage car, which has six-wheel trucks, the starting resistance, for the light weight of the car, is six pounds per ton.

Stafford Roller Bearings Applied to Pedestal Type Boxes

Freight Car Loading

WASHINGTON, D. C.

TOTAL FREIGHT CAR LOADING during the week ended March 17 amounted to 904,286 cars, a decrease of 933 as compared with the week before but still in excess of any previous record for the corresponding week of the year. The increase over last year was 89,204 cars and over 1921 was 212,890 cars. The loading of grain and grain products, coal and l. c. l. merchandise was less than that for the corresponding week of last year but all other classes of commodities showed increases over both 1922 and 1921. Forest products showed an increase of 20,187 and miscellaneous freight of 65,540 over last year.

From January 1 to March 17 this year the total car loading has amounted to 9,474,662 cars, an increase of 1,232,574 over the total for the corresponding period of last year and an increase of 1,808,466 cars as compared with the corresponding period of 1921. There was also a substantial increase over the loading for 1918, 1919 and 1920.

The freight car shortage showed a further decrease during the week ended March 14 to an average of 74,442. This included 30,405 coal cars, a decrease of 4,237, and 35,530 box cars, a decrease of 672.

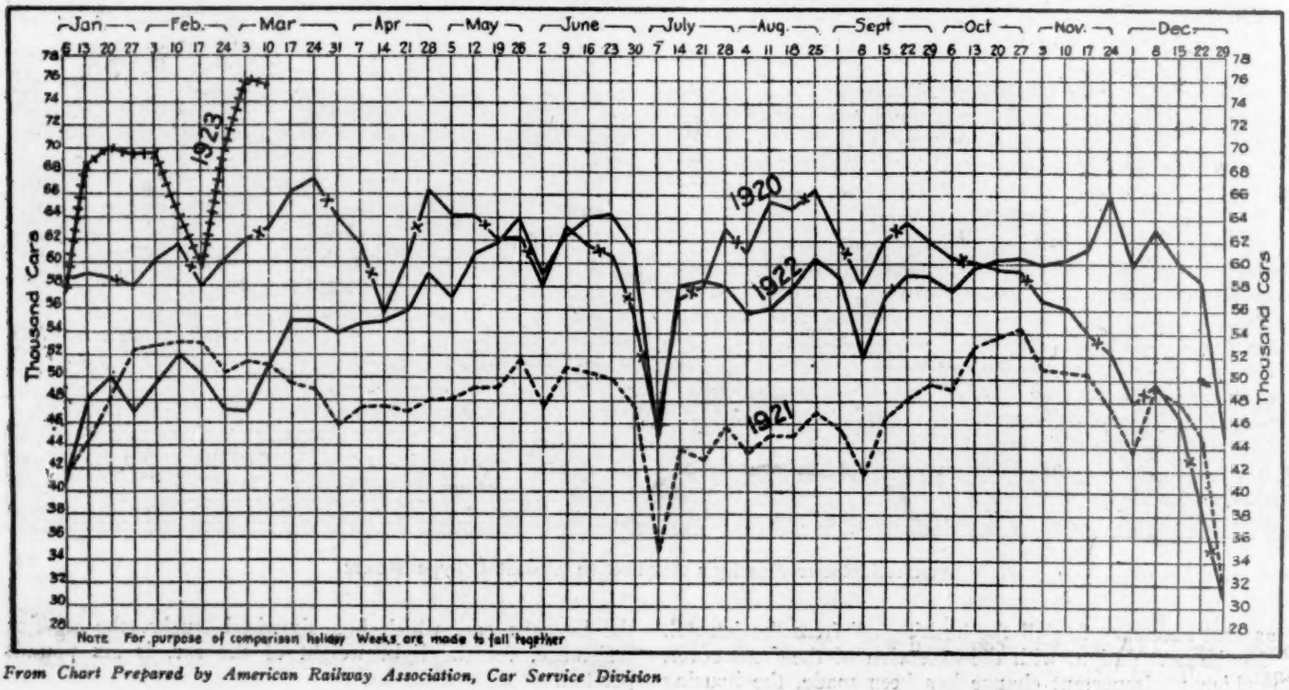
REVENUE FREIGHT LOADED

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. WEEK ENDED SATURDAY, MARCH 17, 1923

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded	Corresponding period	
										1923	1922	1921
Eastern	1923	7,648	3,121	57,176	4,214	5,708	2,218	60,132	85,180	225,397	.....	.....
	1922	7,362	2,700	52,416	1,933	4,866	887	67,194	68,018	.....	205,376	165,011
Allegheny	1923	2,788	2,466	54,063	6,880	3,602	4,393	48,262	79,169	201,623	.....	.....
	1922	2,475	2,418	56,281	4,079	2,755	1,406	49,654	55,522	.....	174,590	137,449
Pocahontas	1923	252	72	22,466	586	1,670	242	6,102	4,154	35,544	.....	.....
	1922	237	72	23,167	230	1,189	20	5,916	3,613	.....	34,444	23,569
Southern	1923	3,775	2,153	21,375	1,406	22,976	1,532	39,631	52,693	145,541	.....	.....
	1922	3,328	2,043	23,400	543	16,962	652	38,307	42,737	.....	127,972	112,024
Northwestern	1923	11,598	9,611	7,268	1,721	22,463	916	26,575	30,707	110,859	.....	.....
	1922	10,794	7,590	7,286	1,273	16,274	785	27,684	27,992	.....	99,678	93,034
Central Western	1923	9,398	11,155	17,085	404	9,095	3,068	33,853	46,346	130,404	.....	.....
	1922	10,836	9,650	22,748	248	5,440	982	33,633	36,647	.....	120,184	101,810
Southwestern	1923	3,829	2,055	4,097	111	8,638	417	14,606	21,165	54,918	.....	.....
	1922	4,375	2,044	5,492	178	6,479	562	14,363	19,345	.....	52,838	58,499
Total West. districts	1923	24,825	22,821	28,450	2,236	40,196	4,401	75,034	98,218	296,181	.....	.....
	1922	26,005	19,284	35,526	1,699	28,193	2,329	75,680	83,984	.....	272,700	253,343
Total, all roads	1923	39,288	30,633	183,530	15,322	74,152	12,786	229,161	319,414	904,286	.....	.....
	1922	39,407	26,517	190,790	8,484	53,965	5,294	236,751	253,874	.....	815,082	.....
	1921	35,919	26,494	125,968	5,806	49,558	6,091	211,391	230,169	.....	.....	691,396
Increase compared	1922	.....	4,116	.....	6,838	20,187	7,492	.....	65,540	89,204	.....	.....
Decrease compared	1922	119	.....	7,260	.....	.....	.....	7,590	.....	.....	.....	.....
Increase compared	1921	3,369	4,139	57,562	9,516	24,594	6,695	17,770	89,245	212,890	.....	.....
Decrease compared	1921	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
March 17	1923	39,288	30,633	183,530	15,322	74,152	12,786	229,161	319,414	904,286	815,082	691,396
March 10	1923	41,532	31,039	186,327	15,240	75,548	11,818	229,146	314,569	905,219	820,886	700,440
March 3	1923	44,967	32,810	193,551	16,138	76,131	10,547	226,818	316,934	917,896	793,115	711,367
Feb. 24	1923	40,364	32,460	178,457	14,913	69,891	10,420	201,390	282,328	830,223	728,925	659,642
Feb. 17	1923	40,179	30,274	180,988	14,912	59,431	9,816	208,913	273,265	817,778	773,275	692,007

Compiled by the Car Service Division of the American Railway Association.

WEEKLY REVENUE FREIGHT LOADED—FOREST PRODUCTS



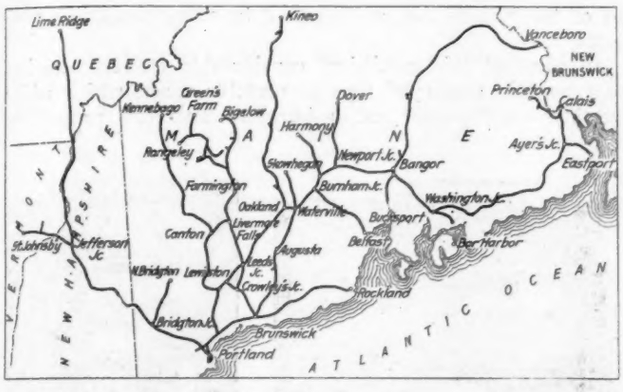
From Chart Prepared by American Railway Association, Car Service Division

Maine Central Has Good Equipment Condition

March 1 Figures Show 5.1 Per Cent Bad Order Cars and 13.9 Per Cent Unserviceable Locomotives

ALTHOUGH THE MAINE CENTRAL is a comparatively small road and in spite of the fact that about two-thirds of its stock is owned in its home state, or nine-tenths in New England, it is a property not without considerable interest, particularly at this time. Part of this interest lies in a certain contrast which the Maine Central offers to its neighbor carriers in New England which in recent months seem to have had a recurrence of some of their operating and other difficulties.

The Maine Central has an equipment situation much better than that of the New England carriers as a whole, which feature is of special interest because much of the difficulties in



The Maine Central

New England during the past few months have been due to an unsatisfactory motive power condition. The Maine Central in 1922 had a sizeable credit per diem balance, in which respect it also differed markedly from its neighbors. Its recovery in earnings generally, while not sufficient to put things back on a pre-war basis was, nevertheless, rather satisfactory. In January and February of this year severe snow storms and an unusually heavy fall of snow resulted in a net operating deficit for the two months of about $400,000. This is a bad start for the year but indications are that it should be readily compensated for in later months.

The Maine Central has apparently been devoting the better part of its efforts during the past two years to putting its house in order and to eliminating, insofar as possible, the adverse effects to which it was subjected during federal control and the period following. The measure to which it has succeeded is evidenced in various ways. One detail is the fact that the Maine Central is one of the very few railroads in the country which can be said to have a normal equipment repair situation. On March 1, 1923—to take the latest available figures—the road had a percentage of bad order cars of only 5.1 and a percentage of locomotives held for repairs requiring over 24 hours of but 13.9. The percentage of bad order cars on all of the railroads of the country on that date was 9.5 and of unserviceable locomotives, 20.8, so it will readily be seen that the Maine Central equipment is in very satisfactory shape. The Maine Central is in particular contrast to its neighbors in New England. Its bad order car percentage on March 1—as noted, 5.1—compared with 11.9 for the New England roads as a whole and its unserviceable locomotives—13.9 per cent—compared with 25.1 for the New England district as a whole.

The Maine Central in 1921 had a deficit after fixed charges of over $2,000,000. In spite of this it adopted the policy of keeping up with its equipment repairs and of putting in shape as rapidly as possible the cars returned to it in poor condition. During 1921 the freight car shops were fully manned and operated to their economical capacity in this work and beginning in September 725 box cars were sent to outside shops for rebuilding. This program was continued into 1922 and during that year 343 cars were rebuilt in company shops and restored as new cars. The company has, in addition, placed orders for 500 new cars, delivery on which is expected during the spring of 1923.

The strike in 1922 succeeded in interfering with operations in the shops for a period of about two months but new forces were recruited rapidly enough so that they had begun to function in normal fashion by September. The annual report states that "at the close of the year shops and enginehouses were fully manned with satisfactory employees, and the output and character of the work were fully equal to that which had been obtained prior to the occurrence of the strike." In August, a fire at Portland, Me., damaged 15 locomotives. Six of these were promptly sent to the Baldwin Locomotive Works and returned in January, 1923, after having been given extensive repairs. Other locomotives needing less extensive repairs were sent to the Portland Company and the Bath Iron Works, Ltd.

MAINE CENTRAL CONDENSED INCOME STATEMENT

	1922	1921
Freight	$14,165,202	$14,255,857
Passenger	4,569,470	4,874,470
Total railway operating revenues	20,387,172	20,590,064
Maintenance of way and structures	3,197,115	3,926,106
Maintenance of equipment	3,302,011	4,704,186
Traffic	163,596	158,741
Transportation	9,092,827	10,054,785
General expenses	565,880	555,820
Total railway operating expenses	16,443,382	19,533,352
Net revenue from railway operations	3,943,382	1,056,712
Railway tax accruals	1,180,447	1,263,982
Railway operating income	2,761,245	—210,180
Equipment rents—Net credit	135,594	Dr. 108,212
Joint facility rents—Net debit	54,197	148,571
Net railway operating income	2,842,643	—466,963
Total other income	Dr. 162,730	436,789
Gross income	2,679,913	—30,175
Total deductions from gross income	2,128,756	2,135,187
Surplus after charges	551,158	—2,165,362

The annual report, with further reference to the freight car situation, says: "The large expenditure made in the reconstruction of freight cars has disposed of the entire accumulation of cars held for this purpose. Cars developing defects are now receiving prompt repairs. * * * At the close of 1922, there were 202 Maine Central cars out of service, this constituting 2.7 per cent of the total number of cars owned." The total number of cars held for repairs at the end of the year was 5.4 per cent.

The 1922 income statement of the Maine Central shows a surplus after charges of $551,158, as contrasted with a deficit after charges in 1921 of $2,165,362. The company has not yet restored its dividends. Its preferred stock is 5 per cent cumulative but no dividends have been paid since September, 1920, thus leaving the dividends since that time in arrears. The common stock received 6 per cent up to the third quarter of 1920, but has had no payments since.

The improvement in operating results in 1922 as compared with 1921 is further shown in the fact that the net operating income or net after rents in 1922 of $2,842,643

compared with a deficit in 1921 of $466,963. The company had an increase in 1922 of 9 per cent in its freight ton-miles but its freight revenues and total revenues also were slightly less than in 1921—the decreased freight revenues with increased traffic being ascribed to the 10 per cent reduction in freight rates effective July 1.

The operating revenues in 1922, $20,387,172, were actually $202,892 less than in 1921. In contrast, there was a decrease of $3,089,970 in operating expenses, the 1922 operating expenses totaling $16,443,382 as compared with $19,533,352 in 1921. About one-half the decrease in expenses was in maintenance of equipment. This was partly due, however, to certain adjustments with reference to charges in 1921 for the cost of rebuilding cars. The Interstate Commerce Commission ruling is to the effect that when cars are repaired to an extent amounting to virtual rebuilding the cars should be written off as equipment retired and the cost of the rebuilt cars charged to investment account as additional equipment. The Maine Central had charged the cost of repairs in this instance to operating expenses in 1921, and in 1922, as a result of the ruling mentioned, credited its maintenance expenses with an amount of $487,500. Other reasons for the decrease in expenses were decreases in wages, lower fuel costs, etc. Maintenance of way expenses were less, also partly because of the unusual amount of work done in the preceding year.

MAINE CENTRAL PROGRESS SINCE FEDERAL CONTROL

Year	Net operating income	Net after fixed charges	Dividends
1918.....	def. $581,781	$972,193*	$870,888
1919.....	def. 1,212,203	1,085,971*	870,888
1920.....	def. 2,573,706	304,433†	653,166
1921.....	def. 466,962	def. 2,165,362	.....
1922.....	2,842,683	551,158	.....

The Maine Central's standard return was $2,955,697.
*Includes standard return.
†Includes standard return for two months and guaranty for six.

Maine Central taxes in 1922 totaled $1,180,447, a reduction of $83,535, as compared with 1921. Of the total taxes, by far the larger part, or to be exact, $936,479 was for the 5½ per cent excise tax paid to the state of Maine. This tax thus was only slightly less than the interest on funded debt which in 1922 was $1,103,895; it exceeded the rent for leased roads of $905,591. President McDonald, in his annual report, speaks with reference to the burdensome nature of the tax as follows:

"The excise tax which the company is required to pay to the state of Maine and which is declared in the statute to be 'for the privilege of exercising its franchises and the franchises of its leased roads in the state,' is disproportionate to the present value of the railroad franchise, and in view of the conditions which now surround railroad operation, seems unreasonable and excessive. Continued efforts have accordingly been made to secure some modification of the existing law. A bill was submitted to the present legislature which would reduce the rate of tax from five and one-half per cent of gross transportation receipts earned in the state to four and one-half per cent of such receipts. This measure was referred to the committee on taxation and a public hearing thereon was held at Augusta, on February 7, 1923, at which the case of the railroads was fully presented. The committee made an adverse report which was accepted in both branches of the legislature and no relief from this heavy burden of taxation is now in sight."

THE STATION AGENT should remember that the personal equation enters into the obtaining of traffic. There is no doubt that is secures and holds some. But remember, also, that this is only a very small part compared to that secured and retained by rendering the patron adequate service, which enables him to transact his business with a minimum of annoyance to himself and his customers. Not even the closest personal friendship with the patron will enable a representative of the railroad to retain that patron's business if the service rendered is unsatisfactory.—*C. G. Johnson.*

Getting Double the Space in Portable Safety Vaults

WHILE SAFETY VAULTS were built originally for protection against burglary, they have come to be considered also as a protection against fire for a much larger mass of papers, ledgers and documents than it was the former practice to keep in such depositories. Thus, the tendency has developed to look upon the safe quite as much as a filing cabinet as a security against burglary, fire and kindred dangers.

As much as it is desired, however, to furnish vaults for every purpose, railroads are almost always confronted with the high cost and bulkiness in this equipment with the results that many offices that really should have safes have none and that in a great majority of cases the offices that are equipped with safes are provided with only a portion of the vault space they actually need. This is particularly true of stations where few agents are able to put into a safe the valuable records that should go in and in many cases even all of the records that are required by regulation to be protected.

In view of this condition, considerable interest attaches to a recently developed type of portable vault, which while meeting requirements as to burglary and fire protection,

Two Views of the Vault with Station Records

affords a much greater capacity for records than the old iron safe of the same price. The article is a pressed steel product, having double walls of cold rolled steel, electrically welded, and a heavy door which fits into the frame with an interlocking tongue and groove. It measures 52-in. in height on the outside (the same height as the standard steel filing cabinet), 25⅛-in. in width and 27-in. in depth and on the inside is 42⅛-in. high, 18⅛-in. wide and 20¾-in. deep. It has an interior capacity of 9 cu. ft. and weighs approximately 400 lb.

It is especially adapted to railway station use and aside from requiring minimum floor space and affording adequate protection against burglary and fire has the added advantage of the adaptability of its interior for filing purposes, the safe in this respect being designed to accommodate in various combinations many standard filing sections which the manufacturer also furnishes for office use. Mounted on cast steel ball-bearing casters, the safe is easily moved, is light enough in weight to go in any passenger elevator or to be shipped from place to place and is so finished as to be adapted to various arrangements in an office, consistent with good appearance. The safe is called the Shaw-Walker portable vault and is a product of the Shaw-Walker Company, Muskegon, Mich.

General News Department

Joseph S. Foster has filed a suit in the St. Louis Circuit Court asking $20,000 damages from the Order of Railway Conductors and its local and national officers, charging them with conspiracy in expelling him from the order on June 13, 1920. Mr. Foster alleges in his petition that he and 47 others were tried by the order as a sequel to the outlaw switchmen's strike, charged with disobeying and interfering with official orders. Of the 48 tried, 14 were expelled.

C. N. R. Acquires New Quarters in Montreal

The Canadian National has leased two and a half floors, 90,000 sq. ft., of the Almy building, at Bleury and St. Catherine streets, Montreal, to house additional offices moved to that city with the establishment there of the railway's headquarters.

Clerks to Have Bank in Cincinnati

The comptroller of the currency has approved the application of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees for a national bank charter. The bank will be known as the Brotherhood of Railway Clerks' National Bank and will have a capital of $200,000 and a surplus of $50,000. Under the plans the union will hold 51 per cent of the stock and individual members the remaining 49 per cent.

Coal Storage Investigation Planned

Decision to undertake a nationwide coal storage investigation was reached by the Executive Board of the American Engineering Council of the Federated American Engineering Societies at its meeting in Cincinnati, Ohio, on March 23-24. General endorsement of the plan for government reorganization submitted to Congress with the approval of President Harding and Cabinet, and continuance of the Committee on Transportation, headed by Max Toltz, St. Paul, Minn., were other outstanding features of the meeting. The personnel of the committee to conduct the coal inquiry, which is to be made unless there is objection from the constituent societies, will be announced later.

Central Railway Club

Until recently the Central Railway Club has held bi-monthly meetings. Three months ago it decided to hold monthly meetings during the season, every other meeting, however, being in the nature of a topical discussion or open forum, without a formal paper. At the meeting on Thursday evening, April 12, 1923, at the Hotel Iroquois, Buffalo, at eight o'clock, the following topics will be discussed:

1. Errors in billing.
2. Preparation of cars for flour and grain loading.
3. Is it preferable to provide an outside inspection pit where locomotives can be inspected and minor repairs such as tightening, etc., be done previous to placing locomotives in engine house?

Secretary Hoover Recommends Postponement of Government Construction

A recommendation that in view of the tremendous activity in construction work throughout the country the government shall not undertake for the present any but the most necessary work under the building program authorized by Congress at this last session, but that the work be held in abeyance with a view to employing idle men during the next period of depression, has been sent to President Harding by the Secretary of Commerce. For the government to enter into competition with private construction at this time, he said, will give no additional employment to labor, but must displace a certain amount of private construction; and governments are in better position than private concerns to speed up in times of less demand, as was done in the last depression, as the result of the unemployment conference. Mr. Hoover calls attention to the fact that transportation facilities available for building materials are fully loaded, and that almost constant shortages are complained of.

An Up-to-Date Station

The Chicago Union Station, now under construction, will include a jail, a chapel and a morgue. The jail will consist of two cells, each completely equipped, capable of accommodating several prisoners and will be built in the basement. A reception room, heavily barred, will give access to the cells. The jail will be used for holding prisoners passing through Chicago and will eliminate the necessity of an officer being handcuffed to the prisoner while waiting for trains. When the jail is completed, an officer will be able to receive the cell keys from the custodian, lock the prisoners in the cell and be free until train-time. The chapel will be completely furnished and equipped for funeral services.

P. R. R. Fire Fighters

Pennsylvania Railroad employees extinguished 272 fires last year on company premises. The losses caused by these fires amounted to only $21,294, while the railroad property endangered had an insurance valuation of $28,454,105. The average loss amounted to about $80 per fire. The Insurance Department's report shows that the regularly organized fire brigades extinguished 66 fires and locomotives equipped with fire apparatus extinguished 18. Chemical extinguishers, water casks, and fire pails were used in putting out 105 fires.

Prizes for Freight House Men

Prizes of $20, $10 and $5 are offered by the New York Central Lines to employees in the freight department for the most satisfactory answers to a series of questions accompanying a "Freight Claim Prevention Letter" issued monthly by the Loss and Damage Prevention Committee. Such a letter will be published each month, in the New York Central Magazine, covering the duties of some particular class of employees. The March letter was addressed to the receiving clerk, and will be succeeded by letters to the checker, the car inspector, the stevedore, yardmen, etc.

Central Vermont Not to Use Providence as Ocean Port

If the Central Vermont completes the construction of its subsidiary line, the Southern New England, to Providence, R. I., it will not construct extensive harbor terminals at that point. This assurance was given to the provincial government of New Brunswick by W. S. Thompson, publicity director of the Canadian National which controls the Central Vermont. The Canadian maritime provinces have been somewhat disturbed by the plan of the railway controlled by the Canadian government to build a line to another port in the United States, which they fear would be prejudicial to the interests of their ports at Halifax and St. John.

Mr. Thompson said that the completion of the line to Providence was only for the purpose of realizing on capital expenditures already made thereon and to escape franchise penalties. He said that the company did not plan extensive terminal facilities at Providence and that the new line would be used only for local business.

Operating Statistics of Large Steam Roads—Selected Items for the Month of January, 1923,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotive and tender	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line daily: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany	1923	394	297,154	316,617	30,450	4,850	72.6	266,306	105,280	113	27	19.0	...
	1922	394	238,710	257,117	29,015	4,126	67.4	208,163	79,101	116	26	18.4	...
Boston & Maine	1923	2,455	580,349	640,376	54,426	10,294	73.9	526,200	227,888	309	130	29.6	1
	1922	2,455	501,151	557,917	46,248	10,001	70.9	505,214	205,736	313	142	31.1	42
N. Y., New H. & Hartf	1923	1,974	416,313	444,399	33,251	8,627	75.7	436,708	199,797	267	92	25.7	...
	1922	1,977	412,009	449,330	28,847	9,463	67.8	472,958	192,282	284	84	22.9	29
Great Lakes Region:													
Delaware & Hudson	1923	886	350,564	493,901	38,577	7,653	65.7	510,561	267,626	227	67	22.9	4
	1922	887	337,920	441,219	28,993	7,603	61.4	506,335	248,323	261	45	14.7	101
Del., Lack. & Wn	1923	994	491,878	613,112	109,942	13,055	66.7	762,941	364,218	283	103	26.6	5
	1922	994	482,442	599,691	119,924	13,244	67.7	722,620	325,261	295	68	18.7	25
Erie (inc. Chic. & Erie)	1923	2,309	1,200,448	1,373,088	60,843	38,961	73.4	2,317,815	1,183,038	551	205	27.1	...
	1922	2,309	953,967	1,067,001	45,179	27,857	68.3	1,654,273	786,475	569	196	25.7	78
Lehigh Valley	1923	1,317	446,962	505,530	61,607	10,993	68.4	681,586	350,344	272	271	49.9	...
	1922	1,316	531,838	596,868	66,602	14,161	63.4	862,151	395,383	439	106	19.4	131
Michigan Central	1923	1,827	649,377	665,061	25,641	19,164	67.5	1,054,254	454,024	290	93	24.3	8
	1922	1,827	475,183	483,113	19,052	12,941	61.9	712,478	267,761	318	92	22.4	80
New York Central	1923	6,486	2,670,916	3,112,915	242,813	82,812	63.4	5,121,546	2,397,073	1,134	583	34.0	2
	1922	6,486	1,911,635	2,121,899	146,169	59,322	62.2	3,482,454	1,500,177	1,187	540	31.3	350
N. Y., Chic. & St. L	1923	1,225	564,615	582,470	5,113	15,068	69.9	826,469	373,019	165	69	29.6	6
	1922	1,225	449,631	454,794	1,305	12,326	63.4	669,810	268,007	183	68	27.0	58
Pere Marquette	1923	2,182	407,568	422,410	8,239	9,589	71.7	524,395	257,085	162	47	22.3	...
	1922	2,191	289,994	293,643	5,707	6,712	64.4	403,335	179,206	155	51	24.7	27
Pitts. & Lake Erie	1923	231	177,957	182,113	1,627	5,790	65.5	430,750	256,741	59	16	21.4	...
	1922	228	88,775	93,931	726	2,915	63.2	205,212	117,334	56	20	26.0	15
Wabash	1923	2,418	589,132	629,499	8,915	17,320	75.9	896,824	409,638	241	99	29.1	...
	1922	2,418	589,402	621,956	7,217	14,855	68.8	812,761	357,747	273	67	19.7	26
Ohio-Indiana-Allegheny Region:													
Baltimore & Ohio	1923	5,212	2,245,577	2,610,635	174,390	59,088	65.8	3,682,156	1,870,250	1,017	287	22.0	10
	1922	5,235	1,576,690	1,827,735	140,493	37,483	63.5	2,336,650	1,147,283	951	449	32.1	183
Central R. R. of N. J	1923	694	320,448	350,135	41,898	6,289	60.3	429,768	216,885	194	80	29.1	...
	1922	692	281,777	312,970	37,607	5,346	56.2	373,572	180,919	214	42	16.6	10
Chicago & Eastern Ill	1923	945	284,855	295,849	4,242	7,047	64.4	444,860	231,669	105	67	38.8	2
	1922	945	217,167	218,673	3,487	5,071	61.3	318,091	160,259	123	38	23.5	45
Cleve., Cin., Chic. & St. L.	1923	2,377	797,337	834,385	7,873	22,988	65.8	1,462,041	736,724	302	144	32.3	...
	1922	2,383	649,968	684,264	4,549	16,908	58.9	1,082,457	477,500	317	130	29.0	47
Elgin, Joliet & En	1923	460	146,191	163,982	12,580	4,384	66.3	329,204	200,329	82	18	18.1	...
	1922	459	99,743	111,074	8,592	2,791	65.0	211,416	112,316	100	8	7.6	29
Long Island	1923	393	49,702	62,747	10,322	607	58.0	36,986	14,600	41	11	21.6	...
	1922	394	39,896	43,777	7,491	443	61.7	24,723	9,385	37	10	20.5	1
Pennsylvania System	1923	10,884	4,870,234	5,418,818	455,959	120,389	64.6	8,077,660	4,097,961	2,497	812	24.5	...
	1922	10,882	4,032,130	4,394,908	324,887	95,287	63.9	6,390,195	3,170,730	2,526	951	27.4	619
Philadelphia & Reading	1923	1,117	803,731	923,288	109,094	19,413	65.4	1,331,243	726,956	335	79	19.2	...
	1922	1,119	530,494	503,162	73,466	11,628	61.4	796,324	412,637	377	68	15.3	160
Pocahontas Region:													
Chesapeake & Ohio	1923	2,551	827,015	903,105	21,261	24,815	61.1	1,857,301	1,023,873	406	117	22.3	8
	1922	2,548	718,978	794,585	19,163	19,517	58.0	1,530,399	830,276	460	104	18.4	115
Norfolk & Western	1923	2,228	809,519	1,038,217	40,631	20,524	62.6	1,583,682	874,601	518	183	26.1	50
	1922	2,228	718,507	869,708	32,890	18,890	58.6	1,461,613	799,747	615	95	13.3	232
Southern Region:													
Atlantic Coast Line	1923	4,860	779,370	785,210	14,380	18,161	65.6	948,651	383,323	305	87	22.1	1
	1922	4,924	592,738	599,057	8,372	12,913	61.8	669,682	243,418	291	120	29.2	29
Central of Georgia	1923	1,907	294,085	302,383	5,345	6,079	74.6	324,604	156,382	114	16	12.1	...
	1922	1,899	183,986	184,583	2,367	3,964	72.1	197,334	85,937	112	23	16.8	14
I. C. (inc. Y. & M. V.)	1923	6,190	2,236,418	2,252,222	46,708	59,505	66.3	3,700,608	1,782,780	729	96	11.7	3
	1922	6,137	1,633,658	1,642,365	37,249	40,673	61.3	2,636,791	1,222,603	749	83	9.9	28
Louisville & Nashville	1923	5,022	1,661,365	1,782,691	66,695	29,402	64.4	1,860,842	908,201	583	127	17.9	...
	1922	5,021	1,378,942	1,457,093	55,571	23,744	59.8	1,557,362	737,688	586	88	13.1	67
Seaboard Air Line	1923	3,550	538,200	551,664	11,737	11,358	67.5	617,407	251,975	188	77	29.0	...
	1922	3,537	384,224	392,236	7,099	8,011	65.5	420,213	159,515	173	71	29.2	...
Southern Ry	1923	6,942	1,598,360	1,644,906	40,441	34,010	69.6	1,823,303	812,419	844	205	19.5	2
	1922	6,942	1,143,868	1,163,648	28,198	23,851	65.9	1,268,507	520,394	866	245	22.1	23
Northwestern Region:													
Chic. & N. W	1923	8,416	1,841,367	1,898,927	24,204	37,187	64.4	2,180,629	988,112	805	256	24.1	..
	1922	8,389	1,536,885	1,582,085	23,228	28,776	60.9	1,732,361	754,610	813	220	21.3	66
Chic., Milw. & St. P	1923	11,022	1,970,975	2,035,741	82,250	45,774	62.1	2,738,405	1,255,742	868	200	18.8	18
	1922	11,027	1,539,592	1,588,433	66,362	34,010	66.5	1,915,295	899,243	834	230	21.6	132
Chic., St. P., M. & O	1923	1,726	358,472	382,119	20,132	6,368	68.0	360,542	162,884	150	56	27.2	...
	1922	1,726	315,114	338,917	14,535	5,224	64.1	292,768	121,771	148	64	30.3	25
Great Northern	1923	8,256	1,090,008	1,127,575	55,108	25,722	63.8	1,584,487	749,022	553	215	28.0	9
	1922	8,265	703,170	726,472	26,861	16,951	69.6	970,928	469,461	581	172	22.8	200
M., St. P. & S. Ste. M	1923	4,352	659,322	640,162	11,166	10,247	53.7	718,030	353,408	273	76	21.8	3
	1922	4,355	402,066	435,818	6,761	8,097	71.2	407,583	187,224	295	56	16.0	40
Northern Pacific	1923	6,423	986,650	1,033,210	58,503	24,685	63.4	1,487,376	679,182	549	177	24.4	20
	1922	6,416	718,862	751,333	49,345	18,631	72.3	1,037,770	504,786	554	138	20.0	106
Oreg.-Wash. R. R. & Nav	1923	2,185	262,515	296,743	45,246	5,791	63.3	357,070	161,291	141	40	21.9	4
	1922	2,166	184,557	208,220	26,311	4,235	75.0	236,735	117,192	126	41	24.6	5
Central Western Region:													
Atch., Top. & S. Fe	1923	9,861	1,786,847	1,874,116	89,680	45,297	64.3	2,608,937	996,833	797	221	23.8	26
	1922	9,806	1,281,648	1,344,211	61,417	31,769	66.3	1,741,557	656,331	777	177	18.6	211
Chicago & Alton	1923	1,010	381,027	387,271	6,855	8,117	64.4	509,956	233,291	117	34	22.7	1
	1922	1,010	350,468	356,306	6,178	6,915	59.8	443,419	194,962	121	42	25.9	14
Chic., Burl. & Quincy	1923	9,326	1,940,861	2,021,579	90,943	50,192	62.1	3,156,117	1,511,216	778	223	22.3	7
	1922	9,326	1,520,881	1,596,174	78,970	36,797	60.9	2,278,264	1,062,570	686	268	28.1	98
Chic., Rock I. & Pacific	1923	7,635	1,432,001	1,462,136	17,857	30,387	69.7	1,640,940	732,821	526	187	26.2	8
	1922	7,662	1,272,677	1,294,487	9,594	25,459	66.7	1,402,963	611,387	586	165	22.0	75
Denver & R. G. Wn	1923	2,593	276,766	347,073	63,575	5,428	67.0	328,143	159,955	236	100	29.8	2
	1922	2,593	213,646	262,820	50,652	4,345	63.7	265,179	123,819	245	64	20.7	45
Oreg. Short Line	1923	2,367	439,638	466,649	31,520	9,039	61.1	586,186	265,755	164	75	31.5	8
	1922	2,360	309,217	320,578	21,550	6,773	67.5	422,256	207,378	160	66	29.3	29
Southern Pacific	1923	6,923	1,087,752	1,235,063	211,079	31,519	68.4	1,766,548	729,260	573	214	27.2	16
	1922	6,925	901,274	1,033,465	187,424	24,874	66.6	1,396,617	560,935	549	195	26.2	45
Union Pacific	1923	3,709	1,133,411	1,156,895	67,511	29,706	69.1	1,637,230	706,473	385	175	31.3	42
	1922	3,665	791,013	802,983	37,189	21,446	72.6	1,146,935	512,010	408	129	24.0	100
Southwestern Region:													
Gulf, Colo. & Santa Fe	1923	1,897	249,914	256,716	5,339	6,503	66.9	373,098	169,917	104	36	25.9	3
	1922	1,895	193,429	198,615	4,701	4,630	62.7	272,619	116,060	123	31	19.9	36
Missouri, Kansas & Texas	1923	1,658	276,904	278,324	7,722	7,579	66.3	414,229	173,444	91	94	50.7	4
	1922	1,658	199,440	199,458	7,732	5,123	66.1	295,717	116,454	140	42	22.9	75
Mo., Kans. & Tex. of Tex	1923	1,739	225,290	229,975	4,304	4,291	66.5	240,993	99,386	737	72	49.5	3
	1922	1,738	195,513	199,907	1,876	3,700	59.0	223,435	88,371	883	43	32.9	18
Missouri Pacific	1923	7,112	1,015,190	1,024,481	32,412	24,416	72.2	1,360,933	648,530	367	216	37.1	...
	1922	7,264	1,032,064	1,043,852	31,236	23,526	65.8	1,370,234	617,306	419	164	28.2	17
St. Louis-San Francisco	1923	4,683	841,806	851,566	16,014	15,249	70.4	849,206	380,985	335	132	28.3	...
	1922	4,683	689,502	698,762	11,742	12,009	63.2	689,933	291,913	340	120	26.1	32
Southern Pacific Lines (in Texas and Louisiana)	1923	3,710	626,137	631,321	7,383	13,573	67.2	787,795	357,856	185	106	30.4	1
	1922	3,710	533,298	534,087	4,698	9,850	60.8	611,672	258,618	197	106	34.7	11
Texas & Pacific	1923	1,953	276,938	277,065	4,753	7,017	71.1	369,606	148,373	96	112	53.7	1
	1922	1,953	285,725	285,884	2,182	6,023	60.9	342,946	126,004	118	82	41.2	13

Compiled by the Bureau of Statistics of the Interstate Commerce Commission.

Compared with January, 1922, for Roads with Annual Operating Revenues above $25,000,000.

Region, road and year	Average number of freight cars on line daily: Home	Foreign	Total	Per cent unserviceable	Stored	Gross tons per train, excluding locomotive and tender	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of Coal per 1,000 gross ton-miles including locomotive and tender	Passenger service: Train-miles	Passenger-train car-miles
New England Region:														
Boston & Albany....1923	1,531	8,347	9,878	2.9	....	896	354	21.7	344	21.8	8,621	272	316,068	1,994,428
1922	3,930	4,018	7,948	5.9	1,620	872	331	19.2	321	24.9	6,477	244	308,959	1,966,074
Boston & Maine....1923	12,402	26,922	39,324	10.1	....	907	393	22.1	187	11.4	2,994	247	830,264	4,361,157
1922	17,190	13,021	30,211	19.6	1,148	1,008	411	20.6	220	15.1	2,703	178	803,616	4,312,724
N. Y., New H. & Hartf..1923	16,250	33,233	49,483	16.4	....	1,049	480	23.2	130	7.4	3,265	250	1,017,012	6,325,268
1922	24,833	14,049	38,882	22.7	3,387	1,148	467	20.3	160	11.6	3,138	196	1,018,062	6,168,158
Great Lakes Region:														
Delaware & Hudson....1923	7,937	10,386	18,323	6.8	....	1,456	763	35.0	471	20.5	9,740	269	193,802	989,389
1922	11,595	4,952	16,547	8.5	537	1,498	735	32.7	484	24.1	9,031	222	190,522	962,655
Del., Lack. & Wn....1923	12,737	12,269	25,006	4.3	....	1,551	740	27.9	470	25.3	11,819	262	489,609	3,326,199
1922	19,084	5,865	24,949	13.5	....	1,498	674	24.6	421	25.3	10,555	229	493,071	3,393,238
Erie (inc. Chic. & Erie)..1923	22,316	36,746	59,062	9.1	....	1,931	985	30.4	646	29.0	16,525	167	594,724	4,174,358
1922	42,826	16,759	59,585	20.1	11,297	1,734	824	28.2	426	22.1	10,986	171	662,585	4,598,344
Lehigh Valley 1923	20,709	20,574	41,283	5.3	375	1,525	784	31.9	274	12.6	8,582	244	349,603	2,630,590
1922	32,705	8,853	41,558	12.9	4,783	1,621	743	27.9	307	17.3	9,689	195	346,236	2,491,639
Michigan Central 1923	8,009	22,527	30,536	7.3	....	1,623	699	23.7	480	30.0	8,018	146	592,220	5,162,481
1922	21,190	12,727	33,917	16.6	7,067	1,499	564	20.7	255	19.9	4,729	152	555,853	4,833,698
New York Central....1923	57,591	108,861	166,452	9.7	....	1,918	898	28.9	465	25.3	11,923	155	2,634,970	20,263,157
1922	101,248	48,739	149,987	19.2	26,621	1,822	785	25.3	323	20.5	7,462	142	2,528,151	19,084,660
N. Y., Chic. & St. L....1923	3,100	13,271	16,371	9.5	....	1,464	661	24.8	735	42.5	9,819	156	150,674	756,607
1922	8,295	7,155	15,450	12.3	2,941	1,490	596	21.7	560	40.6	7,055	136	140,809	647,089
Pere Marquette 1923	5,252	17,344	22,596	5.4	....	1,287	631	26.8	367	19.1	3,801	177	261,618	1,265,340
1922	12,001	7,373	19,374	17.8	1,500	1,391	618	26.7	298	17.3	6,338	144	273,074	1,328,712
Pitts. & Lake Erie....1923	7,966	12,560	20,526	21.3	....	2,421	1,443	44.3	402	13.9	35,820	87	116,271	594,880
1922	20,188	6,778	26,966	47.4	1,489	2,312	1,322	40.3	140	5.5	16,607	88	109,849	549,590
Wabash 1923	6,894	15,184	22,078	4.8	....	1,522	695	23.7	599	33.3	5,465	175	436,495	2,446,244
1922	13,365	8,480	21,845	14.6	709	1,379	607	24.1	528	31.9	4,773	182	526,533	2,721,741
Ohio-Indiana-Allegheny Region:														
Baltimore & Ohio....1923	47,770	58,199	105,969	9.4	....	1,640	833	31.7	569	27.3	11,575	211	1,428,350	8,930,102
1922	74,452	25,171	99,623	14.3	12,369	1,482	728	30.6	371	19.1	7,069	212	1,436,261	8,746,548
Central R. R. of N. J....1923	12,192	16,540	28,732	6.9	....	1,341	677	34.5	244	11.7	10,075	224	336,765	1,551,773
1922	21,613	6,632	28,245	6.2	9,553	1,326	642	33.8	207	10.9	8,438	201	324,338	1,553,427
Chicago & Eastern Ill....1923	9,735	7,384	17,119	18.0	....	1,562	813	32.9	437	20.6	7,907	203	222,582	1,380,154
1922	16,124	3,006	19,130	11.2	3,660	1,465	738	31.6	270	14.0	5,470	195	220,446	1,456,292
Cleve., Cin., Chic. & St. L.1923	9,659	26,090	35,749	8.1	....	1,834	924	32.0	665	31.5	10,000	156	737,196	4,436,031
1922	19,446	16,575	36,021	11.2	3,538	1,665	735	28.2	428	25.7	6,465	154	685,139	4,250,146
Elgin, Joliet & En....1923	8,303	6,022	14,325	10.4	....	2,252	1,370	45.7	451	14.9	14,657	151	.....	.....
1922	10,744	2,647	13,391	9.9	1,178	2,119	1,126	40.2	271	10.3	7,888	165	.....	.....
Long Island....1923	1,614	6,792	8,406	2.8	....	744	294	24.1	56	4.0	1,197	452	189,574	1,079,134
1922	2,240	2,950	5,190	5.5	380	620	235	21.2	58	4.5	768	420	189,916	1,020,413
Pennsylvania System....1923	152,475	137,899	290,374	7.0	4,446	1,659	841	34.0	455	20.7	12,146	175	5,181,950	34,749,587
1922	222,943	60,692	283,635	11.8	69,620	1,585	786	33.3	361	17.0	9,400	164	5,093,414	32,751,218
Philadelphia & Reading...1923	13,966	25,817	39,783	3.5	....	1,656	904	37.4	589	24.1	20,994	204	508,571	2,336,473
1922	27,730	10,727	38,457	4.8	4,073	1,501	778	35.5	346	15.9	11,890	217	491,188	2,228,119
Pocahontas Region:														
Chesapeake & Ohio....1923	29,914	17,050	46,964	10.8	....	2,246	1,238	41.3	703	27.9	12,949	148	452,545	2,544,131
1922	38,953	9,712	48,665	12.1	4,123	2,129	1,155	42.5	550	22.3	10,511	148	440,511	2,423,867
Norfolk & Western....1923	25,027	11,820	36,847	5.0	....	1,956	1,080	42.6	766	28.7	12,664	222	397,727	2,448,208
1922	34,895	5,203	40,098	6.1	5,819	2,034	1,113	42.3	643	25.9	11,580	189	403,509	2,423,597
Southern Region:														
Atlantic Coast Line....1923	15,379	17,426	32,805	10.6	....	1,217	492	21.1	377	27.2	2,544	146	874,665	6,479,391
1922	24,148	7,791	31,939	13.2	....	1,130	411	18.9	246	21.1	1,595	142	858,846	6,058,173
Central of Georgia....1923	2,243	5,872	8,115	7.0	....	1,104	532	25.7	622	32.4	2,646	193	347,428	1,897,056
1922	4,869	2,191	7,060	17.4	....	1,073	467	21.7	393	25.1	1,459	162	320,806	1,720,455
Illinois Central (inc. Y 1923	23,849	39,358	63,207	5.5	....	1,655	797	30.0	910	45.8	9,290	164	1,520,605	9,053,732
& M. V.). 1922	47,614	18,920	66,534	7.0	10,715	1,614	748	30.1	593	32.2	6,427	161	1,442,930	8,354,201
Louisville & Nashville....1923	24,550	26,672	51,222	12.0	39	1,120	547	30.9	572	28.7	5,834	200	1,032,231	6,028,135
1922	40,557	10,294	50,851	14.6	99	1,129	535	31.1	468	25.2	4,739	185	1,032,441	5,855,888
Seaboard Air Line....1923	10,472	13,776	24,248	22.6	....	1,147	468	22.2	335	22.4	2,290	189	665,369	4,083,815
1922	12,958	7,565	20,523	30.8	....	1,094	415	19.9	251	19.2	1,455	201	641,385	4,032,352
Southern Ry....1923	26,474	34,702	61,176	9.3	....	1,141	508	23.9	428	25.8	3,775	223	1,350,930	7,994,290
1922	42,385	16,790	59,175	15.5	5,664	1,109	455	21.8	284	19.7	2,418	222	1,309,441	7,634,995
Northwestern Region:														
Chic. & North Western..1923	32,207	38,992	71,199	6.4	4,065	1,184	537	26.6	448	26.2	3,787	196	1,575,107	9,688,181
1922	48,589	22,776	71,365	6.0	7,000	1,127	491	26.2	341	21.4	2,902	208	1,592,850	9,487,407
Chic., Mil. & St. P....1923	34,851	38,335	73,186	7.9	....	1,389	637	27.4	553	32.5	3,675	189	1,484,888	8,870,375
1922	50,965	20,325	71,290	17.0	....	1,244	584	26.4	407	23.1	2,631	193	1,463,689	8,614,238
Chic., St. P., M. & O....1923	2,033	9,326	11,359	9.9	250	1,006	454	25.6	463	26.6	3,044	195	296,947	1,772,108
1922	3,450	9,594	13,044	13.6	2,242	929	386	23.3	301	20.2	2,276	203	307,347	1,706,024
Great Northern 1923	37,225	14,559	51,784	8.0	....	1,454	687	29.1	467	25.1	2,927	201	987,448	5,683,246
1922	47,244	5,358	52,602	10.7	....	1,381	668	27.7	288	14.9	1,832	199	988,056	5,601,667
Minn., St. P. & S. Ste M.1923	13,948	8,678	22,626	7.2	21	1,089	536	34.5	504	27.2	2,619	150	434,425	2,319,300
1922	19,779	4,003	23,782	11.4	1,475	1,014	466	23.1	254	15.4	1,387	169	422,095	2,335,664
Northern Pacific 1923	26,682	10,495	37,177	9.5	....	1,508	688	27.5	589	33.8	3,411	152	819,465	5,216,990
1922	38,155	7,950	46,105	8.6	3,200	1,446	702	37.1	353	18.0	2,538	160	843,410	5,204,325
Oreg.-Wash. R. R. & Nav.1923	5,100	5,434	10,534	3.0	....	1,360	614	27.9	494	28.0	2,381	245	255,689	1,666,238
1922	5,115	3,651	8,766	2.4	3,907	1,283	635	27.7	431	20.8	1,745	265	258,738	1,639,934
Central Western Region:														
Atch., Top. & Santa Fe..1923	38,553	24,760	63,313	6.5	2,879	1,460	558	22.0	508	35.9	3,261	163	1,845,907	13,922,735
1922	49,671	11,331	61,002	7.2	11,975	1,359	512	20.7	347	25.3	2,159	170	1,767,138	13,214,571
Chicago & Alton....1923	5,865	9,031	14,896	8.4	....	1,328	612	28.7	505	27.3	7,449	214	291,647	1,690,872
1922	9,894	4,912	14,806	3.9	931	1,265	556	28.2	425	25.2	6,225	214	276,055	1,588,871
Chic., Burl. & Quincy....1923	35,705	34,432	70,137	7.2	....	1,626	779	30.1	695	37.2	5,227	184	1,497,967	9,497,862
1922	49,123	15,074	64,197	8.7	275	1,498	699	28.9	534	30.3	3,675	194	1,481,755	9,228,433
Chic., Rock Is. & Pac....1923	21,785	19,463	41,248	10.5	537	1,146	512	24.1	573	34.1	3,096	209	1,295,058	7,321,677
1922	36,920	12,569	49,489	9.3	9,609	1,102	480	24.0	398	24.9	2,574	203	1,296,129	7,261,979
Denver & R. G. Wn....1923	10,676	5,240	15,916	9.9	753	1,186	578	29.5	324	16.4	1,990	277	227,009	1,460,057
1922	13,197	2,508	15,705	9.8	2,677	1,241	580	28.5	254	14.0	1,540	238	228,642	1,450,045
Oreg. Short Line....1923	5,432	4,819	10,251	6.2	157	1,333	604	29.4	836	46.5	3,622	161	284,231	1,995,051
1922	7,744	3,695	11,439	6.4	1,752	1,366	671	30.6	585	28.3	2,835	167	285,849	1,961,520
Southern Pacific 1923	17,361	22,277	39,638	4.8	2,498	1,624	670	23.1	593	37.3	3,398	160	1,330,008	10,820,857
1922	23,468	18,174	41,642	5.6	6,694	1,550	622	22.6	434	28.8	2,613	170	1,318,496	10,351,814
Union Pacific 1923	12,021	11,645	23,666	6.5	2,409	1,445	623	23.8	963	58.6	6,145	181	863,455	6,717,022
1922	19,168	5,465	24,633	10.4	6,048	1,450	647	23.9	671	38.7	4,506	179	849,735	6,609,034
Southwestern Region:														
Gulf, Colo. & Santa Fe...1923	6,135	5,470	11,605	4.6	1,060	1,493	680	26.1	472	27.0	2,889	146	197,240	1,144,636
1922	9,067	3,303	12,370	2.9	2,146	1,409	600	25.1	303	19.2	1,976	151	194,532	1,078,376
Mo., Kans. & Tex....1923	8,128	9,628	17,756	7.7	....	1,496	626	22.9	315	20.8	3,374	164	266,903	1,949,188
1922	7,805	6,286	14,091	6.1	5,490	1,483	584	22.7	267	19.5	2,265	160	270,534	1,899,752
Mo., Kans. & Tex. of Tex.1923	420	9,863	10,283	7.0	....	1,070	441	23.2	312	20.3	1,844	192	240,510	1,546,990
1922	354	11,777	12,131	5.9	3,570	1,143	452	23.9	235	16.7	1,640	179	269,520	1,600,423
Missouri Pacific 1923	20,623	37,568	58,191	7.5	....	1,341	639	26.6	360	18.7	2,942	189	990,144	5,614,316
1922	34,938	17,259	52,197	9.5	4,431	1,328	598	26.2	381	22.1	2,742	180	951,501	5,502,135
St. Louis-San Francisco..1923	13,172	21,190	34,362	6.7	....	1,009	463	25.6	366	20.3	2,686	243	733,176	4,084,153
1922	21,794	7,097	28,891	8.7	....	1,001	423	24.3	326	21.2	2,011	213	751,456	4,178,392
Southern Pacific Lines in 1923	6,076	15,129	21,205	5.8	....	1,258	572	26.4	544	30.7	3,111	138	544,469	3,658,904
Texas and Louisiana). 1922	9,672	15,025	24,697	13.0	2,696	1,147	485	26.3	338	21.2	2,248	150	540,347	3,504,903
Texas & Pacific....1923	4,069	10,658	14,727	13.7	....	1,335	536	21.1	325	21.6	2,451	171	289,910	1,869,692
1922	6,554	5,757	12,311	16.9	....	1,200	441	20.9	330	25.9	2,082	164	298,108	1,918,217

Fifty Thousand Dollars, Plus

In the United States Court at Cleveland, Ohio, on March 26, the Newburg & South Shore Railroad and the Lake Terminal Company were fined $25,000 each, with costs, for violation of the fuel priority rulings of the Interstate Commerce Commission in 1922. The reports say that each company confessed to 50 violations. The charges were to the effect that each company received fifty carloads of coal during the coal strike after claiming priorities as common carriers. Instead of taking this coal for its own use, the Terminal Company is said to have turned its consignment over to the National Tube Company, Lorain, and the Newburg & South Shore its consignment to the American Steel and Wire Company.

Sir Henry Thornton Wants Canada to Use Canadian Coal

Sir Henry Thornton, president of the Canadian National, testifying before the fuel committee of the Canadian Senate advocated the development of Canadian coal fields so that the Dominion might not have to depend upon imports from the United States.

He said that the United States had been good to Canada in respect to supplying her with fuel, but that it might not always be possible. The greater use of coal from Alberta and Nova Scotia in Ontario and Quebec was largely a problem of railway rates, he said. Rates would have to be fixed low enough to allow Canadian coal to compete with that from the United States but not so low as to starve the railways. Answering a question, Sir Henry said that he was friendly to extensions of the railway which would release coal, but he must always remember that it was his duty to get the deficit down. He did not want anyone to lose sight of the financial side of the situation.

Causes of Fires on Railroad Property

Fire losses on railroad properties in 1922, as summarized from a statement of claims paid through the Railroad Insurance Association amounted to $2,846,161. The association has issued a bulletin, classifying the causes of these fires, from which we copy the more prominent items:

	Fires	Loss
Torches, including those used in welding and cutting	24	$46,826
Overheated stove	64	27,977
Defective heater	15	10,568
Sparks from locomotives	166	153,713
Careless use of matches	16	6,356
Careless smoker	38	178,597
Lighted cigarette or careless disposition of lighted match	1	100,258
Adjacent burning property	152	180,556
Tramps	86	69,863
Lightning	13	228,328
Hot cinders	71	9,734
Trespassers	45	73,662
Incendiarism	48	319,042
Electrical; defective wiring, etc.	18	76,123
Hot boxes	11	10,331
Spontaneous combustion	54	82,065
Collisions, derailments, etc.	42	245,712
Hot lading	33	6,252
Ignition of acid	1	14,469

I. C. C. Issues Rules for Payment of Excess Income

The Interstate Commerce Commission has issued an order prescribing regulations for the reporting and payment of railway excess operating income under the provisions of Section 15a of the interstate commerce act for the year 1922 similar to the instructions it had previously issued for 1921 and 1920. The roads are directed to file returns with the secretary of the commission on or before May 1. The order provides that the value of the railway property shall be computed upon such basis as by the carriers is deemed equitable and in accord with the facts; and that it will be corrected and the actual value determined in the manner provided in Paragraph 4 of the section, which authorizes the commission to use the results of its work under the valuation act. In cases where excess net railway operating income is reported the commission asks for a statement of the title of the fund account in which one-half of such excess was placed when such reserve fund was established, the amount placed in that fund and how the assets in that fund are represented or held. The amount of the remaining one-half as preliminarily computed is directed to be transmitted to the secretary of the commission in Federal Reserve funds drawn to the order of the commission. Where two or more carriers constitute a group under common control and management operated as a single system the returns are to be reported for the system as a whole.

J. M. Kurn Advocates Action Against Talkers

In an open letter to the Ft. Wayne (Indiana) Chamber of Commerce, J. M. Kurn, president of the St. Louis-San Francisco, holds that much might be accomplished if a six months' "open season" devoted to real constructive action were to be substituted for talking. The letter favors a continuation of the program outlined in the Transportation Act of 1920. It reads in part as follows:

"A review of the railroad situation leads me to believe that the thinking public, or rather the real users of transportation, have reached the conclusion that a proper disposition of the great economic question—transportation—is not through the channel of hostility. There is much evidence of a cooperative desire on the part of the shipping public to take the lead and help the railroads to shape conditions so that proper service can be accorded. The public is after service, and that is what the honest transportation official desires to accomplish. In my activities in the Southwest, I encounter a desire upon the part of everyone connected with the railroad machine to render service. We are well over the hill and back to a period of 100 per cent efficiency.

"While I believe in free and full discussion, I feel that there is, among our own ranks, as well as among those who seem to be so anxious to help us, too much talking, and not enough real, genuine action. It does us no good to have a shipper say that he is sympathetically inclined, unless he is willing to follow this with constructive action. Nor does it do any good if the transportation official contents himself with saying that he hopes to accomplish certain desired results. I believe much might be accomplished if we should declare an open season for six months against talkers, and devote that period to real constructive action. We should all get together to see that the national legislation, as contemplated by the Transportation Act, 1920, be studied carefully by every thinker and user of transportation. This will result in an abatement of the desire to tinker with probably the most constructive piece of transportation legislation ever enacted by Congress. This in turn will bring about action by the state legislative and commission bodies."

The Injunction Against the Shopmen

The attorney general, preparatory to the hearing at Chicago on May 2, when the court will consider the application of the government to make permanent the injunction of several months ago against the Railway Employees' department of the American Federation of Labor, has been taking testimony in New York City concerning the lawless acts of strikers and their friends during the strike of last year, and on the conditions of railroad service at that time as affected by the strike. Among those testifying were operating officers and police officers of the New York, New Haven & Hartford, the Lehigh Valley, the Delaware, Lackawanna & Western, the Atlantic Coast Line, and other roads.

On the New Haven road about all of the shopmen, 5,400, left their jobs and the company had to engage more than 10,000 men to obtain a competent working force. The cost of the shopmen's strike to that road was given as $2,537,507. Delay to perishable freight was so serious that over 50,000 claims for damages were received. An officer of the New Haven estimated that similar claims on other roads would bring the total up to $14,000,000 or more.

An officer of the Lehigh Valley said that his road had to hire many thousands of men to get a sufficient force to man its shops. There were 65 assaults against new men on the Lehigh Valley, not counting minor cases. Extra guards to the number of 350 had to be employed, costing $268,000.

On the New York, Ontario & Western, the strike was 95 per cent effective and the cost of extra guards was over $100,000.

A police officer of the Delaware, Lackawanna & Western said that the striking shopmen at Port Morris, N. J., organized a camp and drilled with rifles. Over 400 extra guards were employed by the road, costing $363,000.

On the Seaboard Air Line, the number of police officers, watch-

men and guards was increased from 270 to 910. About $500,000 was spent by this road for housing and feeding the new men.

The superintendent of police of the Atlantic Coast Line testified concerning the kidnapping of 13 special railroad guards at Rocky Mountain, N. C. He told also of numerous cases of dynamiting and of assaults on new men. The cost of the strike to this company, up to the end of 1922, was $829,000.

On the Delaware & Hudson, practically every one of the 3,700 shopmen responded to the strike order, and the cost of obtaining and maintaining new men was $1,800,000.

On the Long Island road practically all of the 1,800 members of the shopcrafts' unions left their work, and the cost of the strike was $317,782. Of this sum, $181,493 represented the cost of feeding and housing new workmen; $86,881 for police protection; $38,006 commissions to employment agencies for obtaining new men, and $11,402 the cost of advertising for new employees.

Testimony was also taken from shippers, steamship men and others, showing the disturbance of freight traffic at the time of the strike.

U. S. Chamber of Commerce at Work on Constructive Transportation Program

Three, of a total of five, special committees of the Chamber of Commerce of the United States who are to study various phases of the transportation problem and report later to a general committee, have been organized and are at work. The subjects assigned to these committees together with their membership follow:

Highway and Motor Transport.—A. H. Swayne, vice-president, General Motors Corporation, chairman; W. J. L. Banham, traffic manager, Otis Elevator Company; L. W. Childress, president, Columbia Terminals Company, St. Louis; D. G. Fenner, engineer and manager Public Works Department, Mack Truck Company, New York; Gerret Fort, vice-president, Boston & Maine; Philip W. Gadsden, vice-president, United Gas Improvement Company, Philadelphia; W. H. Lyford, vice-president, Chicago & Eastern Illinois; R. M. Matthiessen, president, the Motors Haulage Company, New York; John D. Miller, president, National Milk Producers' Federation; H. H. Raymond, president, Clyde Steamship Company; Arthur Waterfall, vice-president, Dodge Automobile Company; Henry J. Waters, editor, Kansas City Star, formerly president, Kansas State Agricultural College; R. C. Wright, general traffic manager, Pennsylvania Railroad.

Co-ordination of Rail and Waterway Services.—W. L. Clause, chairman of the board of directors, Pittsburgh Plate Glass Company, chairman; Major-General L. H. Beach, chief of army engineers; C. P. Craig, general manager, Great Lakes-St. Lawrence-Tidewater Association; Dr. Emory R. Johnson, professor of transportation, University of Pennsylvania; C. H. Markham, president, Illinois Central; M. J. Sanders, president, Leland Line, New Orleans; Harvey Sconce, formerly president, Illinois Agricultural Association; George A. Tomlinson, president, Duluth Steamship Company.

Railroad Consolidation.—Carl R. Gray, president, Union Pacific, chairman; J. A. Carpenter, vice-president, Kansas City Chamber of Commerce; Clyde Dawson, Dawson & Wright, Denver; W. N. Doak, vice-president, Brotherhood of Railroad Trainmen; Howard Elliott, chairman, Northern Pacific; John E. Oldham, Merrill, Oldham & Company, Boston; H. A. Palmer, editor, Traffic World, Chicago; Samuel Rea, president, Pennsylvania Railroad; G. W. Simmons, general manager, Simmons Hardware Company; A. W. Smith, special counsel, U. S. Railroad Administration; Henry Bruere, vice-president, Metropolitan Life Insurance Company; Howard Leonard, formerly president, Illinois Agricultural Association.

Other committees yet to be organized are:

Governmental Relation to Transportation.—George A. Post, chairman.

Readjustment of Relative Freight Rate Schedules.—Fred Delano, formerly member of the Federal Reserve Board, chairman.

The appointment of the general committee to which these special committees will report awaits the return to this country of Julius H. Barnes, president of the chamber, from Rome, where he has been attending the sessions of the International Chamber of Commerce. Arrangements are in the hands of Col. A. B. Barber, manager of the chamber's department of transportation and communication.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has issued a decision, upon further hearing, that the subsidiary railroads of the United States Steel Corporation do not and may not compete with steamship lines of the United States Steel Products Company operating through the Panama canal and therefore that the operation of the latter is not in contravention of section 5 of the interstate commerce act.

Shortened Procedure Before the I. C. C.

Chairman Meyer of the Interstate Commerce Commission has issued a statement in answer to various requests and to simplify correspondence dealing with formal complaints before the commission tried under what is known as the "shortened procedure," as follows:

No fixed rules have been adopted by the commission in connection with this new practice. Individual instances require individual treatment. In the cases thus far handled the following are the successive steps:

First, complainant is asked to submit a memorandum of fact and argument, with sufficient copies for each defendant and three for the commission. Ordinarily 30 days should be sufficient time for complainant to submit his memorandum.

Upon receipt of complainant's memorandum copies are sent to the defendants, who are generally allowed 30 days to reply. Defendants must serve copies upon each complainant and intervener within the time alloted. Three copies of this are needed for the commission.

Within 15 days from the date on which reply memorandum is filed each complainant may, if he wishes, submit rebuttal.

The case is then assigned to an examiner, who studies these memoranda as he would a formal record and prepares and causes to be issued a proposed report. At any time up to the date when such report is issued, any party to the case may request the regular formal hearing.

After the examiner's proposed report is served, the procedure is the same as if the case had been formally heard.

Oral argument may be had upon seasonable request therefor, and the decision of the division of the commission is subject to the same rights to petition for rehearing as would be the case if the issues were decided upon a record made at a formal hearing.

Where there are several complainants, or defendants, it is preferred that as far as practicable joint memoranda in lieu of separate papers be submitted on behalf of each side.

State Commissions

The Southern Pacific has been ordered by the California Railroad Commission to refrain from demanding or collecting any charges for re-icing shipments of fresh meats and packing house products initially iced by shippers and not re-iced in transit. The order is the result of complaints filed with the railroad commission by the Western Meat Company, Miller & Lux and the Virden Packing Company, charging that the road has assessed refrigerating charges against the complainants since July 1, 1920, under item 240 of Perishable Protective Tariff No. 1, C. R. C. No. 5, on shipments of meats and packing house products that were not re-iced in transit. The complainants contended that the words "perishable freight not otherwise indexed by name" are not applicable to fresh meats and packing house products, and that Rule 240 does not apply.

Personal of Commissions

William P. Bartel, assistant to the director of the Bureau of Car Service of the Interstate Commerce Commission, has been appointed director, to succeed John C. Roth, who has resigned to become general superintendent of transportation of the Great Northern.

Foreign Railway News

Amalgamation of British Railway Unions Urged

The National Union of Railwaymen, the largest of the three unions in the railway industry in Great Britain, has requested the Trades Union Congress to call a conference looking to the amalgamation of the enginemen's union and the clerks' union with it.

The National Union of Railwaymen is an industrial union "catering" to all classes of railway employees, including those now members of the clerks' and enginemen's organizations. These two are the only craft unions in the railway field and the N. U. R. is, naturally, anxious to include them.

Government of India to Run Railways

The government of India has decided to take over the operation of the Great Indian Peninsular Railway and the East Indian system when the contracts of these two companies expire in 1925. The government owns these railways but British companies, domiciled in London, have been operating them. Some concern is manifested in Great Britain whether or not the change in operation will react to the disadvantage of the British railway supply industry, which now fills most of the requirements of the Indian railways for rolling stock and materials.

German Diesel Locomotives for Russia

The chief of the Russian railway commission in Berlin is reported to have contracted with the Deutsche Werke for the construction of a number of Diesel-engined locomotives, according to Consul Richardson at Berlin. The first two, one with electric and the other with hydraulic transmission, must be delivered during the summer of 1923.

These new locomotives will cost approximately twice as much as steam locomotives, but they have the advantage, among others, of being capable of operation without water—a distinct improvement in a country where water is scarce. This feature will permit the extension of railways into sections of Russia where now they are nonexistent.

Large Railway Repair Shop in Southern France

The locomotive and railway rolling-stock construction and repair shops located near Marseilles in 1919 by the Chantiers et Ateliers de la Capellette comprise the most important industry established in the south of France since the war. The plant covers about 32 acres and has, in addition to a large diversity of factory buildings and sheds and about 7½ miles of track. The shops are equipped to repair 400 railway carriages at a time, and one building, 255 ft. by 575 ft., is able to handle 36 locomotives simultaneously. A large number of electric traveling cranes, some having a capacity of 60 tons, are in use; the entire equipment is said to be complete and modern in every way. Much of the repair work of the Paris, Lyons & Mediterranean Railway and of the Midi Railway, as well as that of the smaller local lines, is handled by this plant.

France's Electrification Program for 1923

Railway electrification in France has given a decided impetus to the development of that country's electrical resources, according to Commercial Attaché Jones at Paris. About 2,000,000 horsepower is now being used in French industries, and the energy to be employed in railway electrification is expected to increase this to 3,000,000 within the next two years.

Expenditures proposed for 1923 on the Midi Railway include 124,000,000 francs (about $8,060,000 at the present rate of exchange) for the electrification of 1,500 kilometers (932 miles) of line. The Paris-Orleans Railway plans to spend 90,000,000 francs (about $5,850,000) this year, part of which will be for power-plant construction. The State Railway electrification program calls for the expenditure of 45,000,000 francs (about $2,975,000), principally in the Paris district; and the Paris, Lyons & Mediterranean Railway, 11,000,000 francs, to be used on the line between Culoz and Modane.

Speeding Up Swiss Electrification

The date for complete transformation of the Swiss Federal Railways has been advanced five years in order to ameliorate the unemployment situation in Switzerland. Complete electrification of the Federal lines by 1928 has been authorized by the Swiss Federal Council, according to reports received by the U. S. Department of Commerce. It had been planned to finish this work by 1933, but owing to the large number of unemployed in Swiss machinery and electrical industries, the general management of the Federal Railways requested an acceleration of the work. According to the new scheme, 75,000,000 to 80,000,000 francs are to be spent yearly instead of 50,000,000 as heretofore planned. (At the present rate of exchange one franc equals about 6.5 cents.)

The total length of line involved is approximately 1,000 miles, of which 250 are now completely electrified. The new program requires the providing of 215,000,000 francs sooner than would otherwise have been necessary, the total amount being 450,000,000 francs. It is expected that about 60,000,000 francs will be advanced by the Confederation to assist the railways in carrying out the new plan.

Locomotive Building in New Zealand

The New Zealand government had contracted with British manufacturers for 45 locomotives, and almost all of them had been delivered when the last instalment was lost in the wreck of the steamer Wiltshire, according to dispatches from Wellington to the Times (London) Trade Supplement. The insurance claim in respect to that loss having been settled, the proceeds are being applied to the replacement of the lost engines and the purchase of additional ones. The British manufacturers who secured the first contract in competition with American, Belgian, Australian and German tenderers will supply the engines now required at a contract price of £5,225 per locomotive, which with freight, insurance, and other charges and cost of assembling and putting on rails in New Zealand will be increased to £6,245—a substantial reduction compared with the original contract price. The engines are to be delivered in New Zealand in July.

Construction of locomotives in the dominion itself is being carried out at the government's own shops at Addington, in South Island, and in the works at Thames, in North Island. The price of these locomotives is, however, higher than that of those being built in Great Britain. The contract price for the Thames engines, of which 16 have yet to be delivered, is about £11,000 each, while those being built by the government will cost in the shop £8,000 each. Engines under construction in the government shops will take two years to complete.

Work on the Orient in Mexico

Reconstruction of the division of the Kansas City, Mexico & Orient which runs from Chihuahua to Marquez, just beyond the crossing of the Conchos river, 91 miles, is now in progress. It is stated that when this work is finished there is a possibility that the line may be extended to a point on the Rio Grade, four miles below Presidio, as was contemplated in the original plans. The distance is 75 miles, and for the most part the route is through the rich but undeveloped valley of the Conchos river. It is stated that this land is capable of being irrigated and could be made to produce big yields of crops of various kinds. The main purpose of rehabilitating the line between Chihuahua and Marquez is to afford shipping facilities for the farmers who located along the route of the road soon after it was built some years ago.

It is expected that if the road is extended to the Rio Grande the gap between the latter crossing point and Alpine, Texas, 50 miles, will be filled in by constructing an extension of the division of the system that now has its southern terminus at Alpine. No information is obtainable here as to the present financial or ownership relations between that part of the Kansas City, Mexico & Orient in Mexico and that which lies in the United States. According to authoritative information received here the Mexican government has extended the concession for completing the line in Mexico for a period of ten years. It is also reported that the Mexico divisions of the system may be taken over by the government and merged into the National Railways of Mexico.

Equipment and Supplies

Short Lines in Market for Equipment

The consolidated purchasing agency of the American Short Line Railroad Association, Railway Exchange, Chicago, is in the market for a number of freight cars and locomotives and is desirous of securing general specifications, prices, and a statement showing whether heavy or light repairs are necessary to place the equipment in interchange condition. The following is a list of equipment and materials wanted by the member lines.

LOCOMOTIVES

1—Weight not more than 75 tons, wheel base not greater than 12 ft. 6 in.—West Virginia delivery.
1—Baldwin, weight about 65 tons, with long wheel base—Missouri delivery.
2—Consolidation, 50 to 65 tons on drivers—Indiana delivery.
1—Consolidation or Mogul, not less than 60 tons on drivers, rigid wheel base, not more than 14 ft., wheel centers 44 in.—Central New York delivery.
3—Eight-wheel, 50 to 75 tons—Eastern delivery.
1—Heisler, weight 80 or 90 tons—Pennsylvania delivery.
2—Mogul, cylinders, 19 by 26, wheel centers 60 to 54 in., steam pressure 200 lb.—Eastern delivery.
3—Mogul, cylinders, 19 by 26, weight 85,000 lb. on drivers—Midwest delivery.
1—Mogul or ten-wheel, cylinders, 18 by 24, weight 50 tons—Midwest delivery.
2—Mogul or ten-wheel, short rigid wheel base, drivers not more than 50 in.—Midwest delivery.
5—Ten-wheel, 65 to 75 tons—Midwest delivery.

FREIGHT CARS

50—Ballast—Missouri delivery.
125—Box, 30 to 50 tons capacity—Indiana delivery.
100—Box, 40 tons capacity—Tennessee delivery.
250—Box, 30 or 40 tons capacity—Missouri delivery.
25—Box, 30 tons capacity—Kentucky delivery.
15—Box, 40 tons capacity, steel underframes—Midwest delivery.
25—Box, 30 tons capacity, A-1 condition—South Carolina delivery.
100—Flat, 40 or 50 tons capacity—Michigan delivery.
50—Flat, 40 tons capacity, steel underframe—Midwest delivery.
10—Flat, 40 tons capacity, steel center frames, 41 ft. or more long—Oregon delivery.
6—Flat, 50 tons capacity, steel underframes, 40 ft. 2 in. long—Utah delivery.
100—Gondola, 30, 40 or 50 tons capacity—Indiana delivery.
100—Gondola, 40 or 50 tons capacity, steel underframe preferred—Tennessee delivery.
250—Gondola—Missouri delivery.
25—Gondola—40 tons capacity—Ohio delivery.
75—Refrigerator—Midwest delivery.

PASSENGER CARS

1—Baggage and mail—Texas delivery.
1—Baggage and mail, 36-in. trucks—Tennessee delivery.
1—Business—Louisiana delivery.
1—Passenger, partitioned for races—Tennessee delivery.
4 to 6—Passenger—Missouri delivery.

BRIDGE MATERIAL

1—Through deck girder, 100 ft. long, E-28 loading. Enough spans, 200 to 300 ft. long to span 1,800 ft. } Missouri delivery.
1—Steel drawbridge, 50 ft. span.
1—Through plate girder span, skewed, 60 ft. to 63 ft. over all.
1—Span, 33 ft. long, Cooper's E-40 loading—Pennsylvania delivery.
2—Deck plate girders, 70 ft. long, E-50 loading, AREA specifications.
2—Deck plate girders, 50 ft. long, E-50 loading, AREA specifications. } Kentucky delivery.

RELAYING RAILS

50 tons 20 lb.—Arizona delivery.
10 miles 40 lb., No. 1—North Carolina delivery.
20 miles 56 lb., A No. 1—South Carolina delivery.
12 miles 56 lb. or 60 lb., A No. 1—Florida delivery.
10 miles 70 lb.
8 miles 85 lb. } Various Eastern deliveries.
10 miles 90 lb.

MACHINERY

1—Engine lathe, 20 in. swing, 12 ft. bed, for rebuilding purposes—California delivery.
1—Wheel lathe—Louisiana delivery.
1—Wheel press, 200 to 300 ton capacity—Texas delivery.

TURNTABLES

2—Capacity, 50 to 75 tons—North Carolina delivery.

TRACK SCALE

1—Capacity, 100 tons—North Carolina delivery.

TANKS

1—Locomotive water tank, capacity 3,600 gal.—Central New York delivery.
1—Locomotive water tank, square U style, 8 ft. by 20 ft., capacity 3,500 to 4,000 gal., water lines 2 in., fuel capacity 8 tons—Arkansas delivery.
1—Fuel oil storage tank, capacity 10,000 gal.—Louisiana delivery.

Locomotives

THE ATLANTA & WEST POINT has ordered three Mikado type locomotives from the Lima Locomotive Works.

THE KENTUCKY & INDIANA TERMINAL has ordered five 0-8-0 type switching locomotives from the Lima Locomotive Works.

THE GRAND TRUNK has ordered five 0-8-0 type switching locomotives and three 0-6-0 type switching locomotives from the Lima Locomotive Works.

THE CAROLINA, CLINCHFIELD & OHIO, reported in the *Railway Age* of March 24 as inquiring for 20 locomotives, has ordered 10 Mikado type locomotives and 12 Mallet (2-8-8-2) type locomotives from the American Locomotive Company.

Freight Cars

THE ATLANTIC COAST LINE is inquiring for from 450 to 500 gondola cars.

THE CANADIAN PACIFIC is inquiring for 1,000 box cars of 40 tons' capacity.

THE ATLANTIC COAST LINE is inquiring for from 30 to 50 steel underframes for caboose cars.

POWERS & QUINLAN, Tulsa, Okla., have ordered 6 tank cars from the Standard Tank Car Company.

THE INDIAN STATE RAILWAYS are inquiring through the car builders for 1,500 covered goods wagons.

THE MCMAN OIL & GAS CO., Tulsa, Okla., has ordered 15 tank cars from the Standard Tank Car Company.

THE IMPERIAL REFINING COMPANY, Tulsa, Okla., has ordered 50 tank cars from the Standard Tank Car Company.

THE SUN OIL COMPANY, Philadelphia, Pa., has ordered 150 tank cars from the Standard Tank Car Company.

THE HOMER WILCOX COMPANY, Tulsa, Okla., has ordered 6 tank cars from the Standard Tank Car Company.

THE CHESAPEAKE & OHIO has let a contract for repairing 1,500 freight cars at the shops of the Richmond Car Works.

THE VIRGINIAN RAILWAY is inquiring for 500 hopper cars of 70 tons' capacity and 1,000 gondola cars of 120 tons' capacity.

JOHN R. WALSH, Savannah, Ga., has ordered 3 tank cars of 8,000 gal. capacity from the Pennsylvania Tank Car Company.

THE MISSOURI PACIFIC has ordered repairs to 1,500 box cars from the Springfield Car & Equipment Company and repairs to 600 coal cars from the Mt. Vernon Car Manufacturing Company.

THE BOSTON & MAINE, reported in the *Railway Age* of March 24 as contemplating buying a number of freight cars is now inquiring for 300 flat cars of 55 tons' capacity, 200 refrigerator cars of 35 tons' capacity and 100 Hart convertible ballast cars of 50 tons' capacity.

THE SEABOARD AIR LINE is inquiring for 25 caboose cars. This company is having repairs made to 1,000 box cars at the shops of the Richmond Car Works. Five hundred box cars are being repaired at Atlanta and some additional cars are being repaired at shops in Tampa.

THE ERIE, reported in the *Railway Age* of March 10 as inquiring for 2,000, 70-ton gondola cars and 2,000, 40-ton box cars, has ordered 1,000 box cars from the Pressed Steel Car Company; 1,000 box cars and 1,000 gondola cars from the Standard Steel Car Company, and 1,000 gondola cars from the Youngstown Steel Car Company.

Passenger Cars

THE PULLMAN COMPANY is building 100 sleeping cars in its own shops.

THE ATLANTIC COAST LINE is inquiring for 25, 74-ft. steel coaches, 15, 70-ft. steel baggage and express cars, also for 5, 70-ft. combination mail and baggage cars.

THE ILLINOIS CENTRAL, reported in the *Railway Age* of January 20 as contemplating the purchase of a small number of passenger cars, is now inquiring for 4 parlor cars, 2 cafe lounge cars, 5 dining cars, and 8 baggage cars, also for 6 horse baggage cars.

THE SOUTHERN PACIFIC, reported in the *Railway Age* of February 10 as inquiring for 147 cars for passenger service, has ordered five 60-ft. chair cars, five 60-ft. coaches, fifteen 72-ft. coaches, fifteen 70-ft. baggage cars and one 72-ft. 6-in. combination coach and baggage car from the American Car & Foundry Company; sixty 72-ft. interurban coaches and ten 77-ft. dining cars from the Pullman Company; forty 70-ft. combination baggage and postal cars from the Standard Steel Car Company. All the above cars are to be of steel construction and all are for the Southern Pacific Lines except the one 72-ft. 6-in. combination coach and baggage car which is for the San Diego & Arizona.

Iron and Steel

THE PENNSYLVANIA has ordered 350 tons of structural steel from the Belmont Iron Works.

THE OREGON SHORT LINE has ordered 699 tons of structural steel from the McClintic-Marshall Company.

THE CHICAGO & NORTH WESTERN has ordered 127 tons of miscellaneous structural steel from the American Bridge Company.

THE PACIFIC FRUIT EXPRESS has ordered 100 tons of structural steel for its car repair plant at Colton, Cal., from the Pacific Rolling Mill.

THE BALTIMORE & OHIO has ordered 2,600 tons of structural steel for an elevator at Locust Point, Md., from the American Bridge Company.

THE LOUISVILLE & NASHVILLE has ordered 300 tons of structural steel for bridge work at Evansville, Ind., from the Virginia Bridge & Iron Company.

THE ST. PAUL UNION STATION COMPANY has ordered 264 tons of structural steel for its train shed, at St. Paul, Minn., from the St. Paul Foundry Company.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered 600 tons of structural steel for use at Indianapolis, Ind., from the Ft. Pitt Bridge Company.

THE GREAT NORTHERN has ordered 325 tons of structural steel consisting of four, 100-ft. turntables and repair material for tables from the American Bridge Company.

THE BOSTON & ALBANY will receive bids until 12 o'clock noon April 10, at Boston, Mass., for the fabrication and delivery of the structural steelwork 226,000 lb. for bridge 70.68, Makepeace Crossing, 1.08 miles west of West Brookfield, Mass.

THE JAPANESE RAILWAYS are inquiring through New York City export houses for 1170 tons of 75-lb. rail, also for 660 tons of 35-lb. rail and the South Manchuria is inquiring for 6,300 tons of 100-lb. rail.

Signaling

THE CHICAGO & EASTERN ILLINOIS has ordered from the Union Switch & Signal Company the material for automatic block signals, single track, between Springhill, Ind., and Emison, 41 miles, and between Vincennes, Ind., and Hazleton, 11 miles. An overlap scheme will be used. When this work is completed this road will have continuous automatic block signaling from Chicago to Evansville, Ind., 289 miles.

Supply Trade News

W. J. Hyman has been appointed a vice-president of the **International Equipment Company, Ltd.**, Montreal, Quebec.

The Pullman Company will construct a one-story car shop at Cottage Grove avenue and 103rd street, Chicago, to cost $40,000.

C. B. Flint, formerly sales manager of the railroad department of the **Paige & Jones Chemical Company,** New York City, has been made first vice-president in charge of the railroad department, with headquarters in New York City.

The Metal & Thermit Corporation, New York City has appointed **C. F. Lederer** as general supervisor of rail welding in charge of all technical work in the field. This company will move its Pittsburgh branch into a new shop completely equipped with new facilities and located at 1514 Fayette street, N. S.

Dr. Cary T. Hutchinson, as noted in the *Railway Age* of March 24, is now associated with Sanderson & Porter, engineers, and will direct the department of railroad electrification of that firm. For thirty years he has been engaged in handling railroad electrification problems. In 1891 the firm of Sprague, Duncan & Hutchinson built the first heavy electric locomotive constructed in this country for Henry Villard, who was then considering the electrification of the Chicago freight terminals. The Baltimore & Ohio engaged Duncan & Hutchinson as consulting engineers for the first steam railroad electrification in the United States built through Baltimore in 1895. From 1906 to 1908, Dr. Hutchinson was engaged by the Great Northern to take charge of the design and construction of the electric equipment of its road over the Cascade mountains. Later, the Illinois Central, which had under consideration the problems involved in its Chicago terminals, appointed Dr. Hutchinson a member of its electrification commission. He was selected in 1920 to take charge of the railway electrification division of the Superpower Survey, for the results of which he is responsible. He initiated and was the chief engineer of the 100,000 horse-power hydro-electric development on the Susquehanna river at Holtwood, Pa., which supplies Baltimore, and he has been connected as consulting engineer with important hydro-electric developments in California, Canada and Mexico. Dr. Hutchinson was also for a time in charge of the department of electrical engineering at Johns Hopkins University and has written a variety of engineering papers on pertinent mathematical and physical topics.

Dr. Cary T. Hutchinson

W. N. Doak, secretary-treasurer of the Automatic Control Company, in a press dispatch from Seymour, Ind., announced the plans of the company to spend approximately $1,000,000 in the construction of a plant at Seymour for the manufacture of Steigelmeyer train control devices. According to the statement, construction will be well under way by May 1. The first building to be erected will be a foundry 50 ft. by 140 ft. of 10 tons' daily capacity. Buildings will be constructed of steel and concrete. Officers of the company are **W. G. Lee,** president; **W. N. Doak,** secretary-treasurer and **Edward Steigelmeyer,** general manager. Mr. Lee is president and Mr.

Doak, vice-president and legislative representative of the Brotherhood of Railroad Trainmen.

Joseph T. Ryerson & Son, Inc., with main plant and offices in Chicago, has bought the plant, stock and good will of the Cincinnati Iron & Steel Company, Cincinnati, Ohio. The Ryerson Company now has steel-service plants in Chicago, St. Louis, Detroit, Buffalo, New York and Cincinnati. The plant of the Cincinnati Iron & Steel Company occupies a full city block at Front & Freemont streets, with about 110,000 ft. of floor space. **Lewis E. Skinner,** who has been for eighteen years with the Ryerson Company and for a long time in charge of the Ohio business is now in charge of the plant. He will be assisted by **C. A. Parnell,** former assistant to Arthur Allshul, manager at the Ryerson Buffalo plant.

Electric Storage Battery Company and Willard Storage Battery Company

The consolidated statement of the Electric Storage Battery Company and the Willard Storage Battery Company for the year ended December 31, 1922, shows gross sales, less cost of manufacture, totaling $11,966,681, as compared with $10,015,812 in the previous year. Net earnings before payment of the federal income tax amounted to $7,570,839, against $5,602,383 for 1921. Dividends were paid totaling $3,196,685 in 1922 and $2,397,492 in 1921. The balance, December 31, 1922, was $21,957,765, as compared with $19,041,211 at the close of 1921.

The consolidated balance sheet as at December 31, 1922, follows:

ASSETS

	1922*	1921
Cash	$2,485,474	$2,519,699
Bills and accounts receivable	5,354,555	3,997,543
Obligations of the United States	4,743,034	4,702,595
Industrial, railway and utility bonds	831,795	.....
Accrued interest receivable	70,098	.....
Inventories	7,928,280	6,960,133
Other investments	1,642,053	1,724,764
Deferred accounts	404,956	466,982
Real estate, plant and equipment	10,624,585	9,565,517
Patents, trademarks and agreements	11,000,001	11,000,001
Insurance fund, cash and securities	116,194	91,477

LIABILITIES

Accounts payable	$2,321,025	$1,184,533
Accrued accounts	341,572	.....
Sundry liabilities and prepayments	.....	295,064
Reserves for unfinished contracts and contingencies	485,143	437,103
Reserve for insurance	116,194	91,477
Preferred stock	32,400	87,500
Common stock	19,946,925	19,891,825
Surplus	21,957,765	19,041,211

*Subject to allowance for federal income tax for year 1922, estimated at $885,000.

Westinghouse Air Brake Company

The Westinghouse Air Brake Company for 1922 reports total profits of $7,924,915, against $1,412,490 in the previous year. After allowing for federal taxes, there was a balance of $6,964,915 for the $29,150,190 capital stock outstanding, equal to $11.94 a share of $50 par value each. The balance, surplus, December 31, 1922, was $15,183,985, as compared with $12,931,103 at the close of the previous year.

The consolidated balance sheet for 1922 follows:

ASSETS

	1922	1921
Cash	$4,908,031	$3,109,607
Accounts and bills receivable	9,532,942	5,068,744
U. S. obligations	2,505,118	1,784,188
Inventories	10,756,678	10,802,329
Investments	7,894,536	8,946,623
Factories	9,965,404	10,666,758
Real estate, other than factories	2,161,341	2,152,153
Patents and good will	4,942,649	4,941,954
Deferred charges to operation	252,523	176,547
	$52,919,223	$47,648,902

LIABILITIES

Bills payable	.....	$800,000
Accounts payable	1,720,366	1,112,491
Taxes, etc., accrued, not yet due	136,778	118,202
Reserve for federal taxes	1,589,644	629,400
Dividend payable January 31, 1923	1,020,366	.....
Capital stock, at par, of subsidiary companies not held by the Westinghouse Air Brake Company.	5,358	19,608
Sundry reserves (including amounts held against patent and goodwill account)	4,112,537	2,893,897
Capital stock issued	29,150,190	29,144,200
Surplus	15,183,984	12,931,103
	$52,919,223	$47,648,902

New York Air Brake Company

The annual report of the New York Air Brake Company for the year ended December 31, 1922, shows total sales of $6,711,462 as compared with $2,434,744 for 1921. The report states that a very substantial amount of unfilled orders has been carried over into the year 1923. Gross income in 1922 amounted to $2,242,991 as compared with $507,780 in the previous year. There was a surplus for the year 1922 of $874,741, against a deficit of $833,699 for 1921.

The balance sheet of the New York Air Brake Company as of December 31, 1922, follows:

ASSETS

	1922	1921
Cash	$1,827,997	$182,805
Accounts receivable	2,277,324	870,601
Securities	7,038	401,298
Inventory	2,361,721	4,053,045
Miscellaneous accounts and investments	242,357	.....
Land, buildings and equipment	8,128,745	13,946,450
Patents, trade names, etc	5,502,709	.....
Deferred charges	123,234	101,989
Total	$20,471,125	$19,556,188

LIABILITIES

Current accounts payable	$715,675	$211,527
Accrued accounts not due	67,741	41,931
Dividends	102,507	127,125
Deferred credit	5,000	25,003
First mortgage 6 per cent bonds	3,000,000	3,000,000
Reserve for contingencies	500,000	.....
Notes payable	.....	4,693,145
Class "A" stock	5,000,000	.....
Common stock	11,080,202	10,000,000
Surplus	.....	1,457,457
Total	$20,471,125	$19,556,188

Bethlehem Steel Corporation

Net income of the Bethlehem Steel Corporation for the year ended December 31, 1922, was $4,605,331, as compared with $10,332,804 for the previous year. Gross sales in 1922 amounted to $131,866,111 against $147,794,352 in 1921. The value of orders booked during the year aggregated $149,211,500, as compared with $52,672,334 for the year 1921.

The consolidated balance sheet, December 31, 1922, shows total assets and total liabilities of $436,880,095. The current assets totaled $114,340,264 against current liabilities of $27,143,073.

In the report to the stockholders, Charles M. Schwab, chairman, and Eugene G. Grace, said:

"At the beginning of the year 1922 the steel plants of your corporation were operated at about 30 per cent of capacity, the lowest operating rate for many years past, and selling prices were correspondingly depressed. Commencing in March the rate of production gradually increased, until at the end of the year the volume of new business warranted full operations. Selling prices also improved gradually, but at the end of the year were still too low to afford a fair profit. The improvement in prices has continued, and present indications are that your steel plants will operate throughout the current year to the capacity permitted by labor and transportation conditions.

"The steel passenger coach department of your Harlan plant operated practically at full capacity throughout the year, and has a sufficient volume of orders on hand to assure continued full operation for at least another six months."

Obituary

Dr. C. W. Gould, western manager of the Gould Coupler Company, died at his home in Chicago on February 19. He had been connected with the Gould Coupler Company for the past 30 years.

W. W. Lavarack, manager of the Railroad Accessories Corporation, 50 Church street, New York City, and treasurer of the Signal Construction Company, Albany, N. Y., died at his home in Montclair, N. J., on March 20, at the age of 68. Mr. Lavarack had been in railway signal engineering work for the past 50 years. He served in England for a number of years as signal engineer of one of the English railroads and in America all his services has been with signal manufacturing companies.

J. Fred Townsend, traffic manager of the National Tube Company, Pittsburgh, Pa., and formerly vice-president of the Lake Terminal Railroad, died on March 22 at his home in Pittsburgh. Mr. Townsend was born in Cleveland, Ohio, on August 16, 1860. He served for a number of years in various capacities on the Cleveland, Lorain & Wheeling, now part of the Baltimore & Ohio System, and left that service to go to the Wheeling & Lake Erie. For more than 20 years he has been connected with the National Tube Company.

Major Abram J. Gifford, formerly in charge of the transportation department of the General Electric Company, Schenectady, N. Y., for many years, died on March 20 at his home in Schenectady. He was born at Hudson, N. Y., in 1849. He was in charge of the Indian agency at Fort Berthold, N. D., from 1884 to 1889 and in 1891 became connected with the Northeast Thomson-Houston Company at St. Paul and in 1894 he was transferred to the transportation department of the General Electric Company at Chicago. In 1899 he was placed in charge of the transportation interests of the company and moved to Schenectady. On March 1, 1920 he gave up his active duties, which were taken over by M. C. Fitzgerald, but he continued in an advisory capacity.

Trade Publications

FERRO CARBON TITANIUM.—The Titanium Alloy Mfg. Company, Niagara Falls, N. Y., has issued a small 44-page booklet describing ferro carbon titanium and its function in the manufacture of steel. In addition to a detailed description of the properties of this alloy, this booklet contains valuable data comparing the properties of untreated steel with those of steel to which titanium has been added. Numerous photographs are also presented showing the properties of this metal.

GAS ENGINES.—The Noble Company, Lansing, Mich., has issued a folder illustrating and describing its line of internal combustion engines in various combinations for various kinds of work. Illustrations show various kinds of pumping combinations, both portable and stationary, in which the engine is shown adapted to operating centrifugal and plunger pumps as well as the diaphragm pumps. Illustrated descriptions of the various kinds of hoists are included and some attention is given to the use of air compressor combinations.

UNARCO PRODUCTS.—The United Asbestos & Rubber Company has recently issued its catalog No. G-22, which is a 111-page, cloth-bound book containing a complete listing of its line of packings; belting; roofings; car insulation; electrical insulation; mechanical rubber goods, including air brake hose, signal hose and injector suction hose, and asbestos and magnesia materials. The various classes of goods, which are well illustrated and described, are listed in five groups under separate section headings and the catalog contains a complete alphabetical index.

PORTABLE LOADER.—The Link-Belt Company, Chicago, has issued a 33-page booklet describing and illustrating its line of portable loaders for general and special uses. The bulletin includes descriptions of conveyor loaders equipped with bag filling devices as well as portable machines adapted for use in series with each other and for indoor or outdoor work. Some attention is also given in the bulletin to the Link-Belt crane. Specifications of the machines are furnished, together with a large number of half-tone illustrations showing the machines in various kinds of work.

CHICAGO & ALTON dining cars now disseminate scraps of history, by means of pictures on the menu. The first of a series, to be issued monthly, is a double folder, the outside cover of which is in colors and shows a picture of the first court-house built in Missouri, as it still exists at Independence, Jackson County. The back of the cover has a full-page story of Independence.

THE TEXAS LEGISLATURE has approved a bill authorizing the consolidation of the Trinity & Sabine and the Beaumont & Great Northern railways which were recently purchased from the receiver of the Missouri, Kansas & Texas by Colonel R. C. Duff of Houston, Tex. Mr. Duff will extend these lines to form a direct route from Waco, Tex., to the gulf. The contemplated improvements will cost $4,000,000.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company will construct a reinforced concrete office building at Topeka, Kan. The structure will consist of ten stories and basement with dimensions of 75 ft. by 150 ft. with a 50 ft. by 150 ft. connection to the present office building.

ATCHISON, TOPEKA & SANTA FE.—This company contemplates the construction of a cut off at Los Angeles, Cal., to connection with the Coast Line near Bakersfield, to provide direct service from San Francisco to Los Angeles.

CANADIAN PACIFIC.—This company will construct a line from Cutknife, Sask., to Withford Lake; the first two sections (approximately 50 miles long) of the line from Milden, Sask., to Empress; the first two sections (approximately 50 miles long) of the line from Leader, Sask., into the territory south of that town; and the first section (approximately 25 miles long) of the line from Wymark, Sask, to Archive. A line will be built in conjunction with the Canadian National from Drumheller, Alberta, to Bull Pound, a distance of 39 miles.

CHICAGO, BURLINGTON & QUINCY.—This company has awarded a contract to the S. T. Geak Construction Company, Chicago, for the construction of the passenger station at Weston, Mo., reported in the *Railway Age* of January 27. A contract has also been awarded both to the T. S. Leake Construction Company, for the seven-stall addition to the roundhouse at Aurora, Ill., as reported in the *Railway Age* of March 17 and to G. A. Johnson & Sons, Chicago, for the construction of a five-stall addition to the roundhouse at Eola, Ill., as reported in the *Railway Age* of March 17.

CHICAGO & NORTH WESTERN.—This company will close bids on April 2 for the construction of a four-story brick office building in Chicago, to cost approximately $150,000.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of fuel oil pumping stations at Little Rock, Ark., Booneville, Ola and Mesa.

CHICAGO, ROCK ISLAND & PACIFIC.—This company is receiving bids for the construction of an eight-stall roundhouse at Haleyville, Okla.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has awarded a contract to the Flick Construction Company, Chicago, for the grading in the construction of the second track between Paxico, Kan., and Volland and between Herington and Latimer, reported in the *Railway Age* of February 24. Contract for the bridge work in this construction has been awarded to the Cedar Rapids Construction Company, Cedar Rapids, Iowa.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company has purchased the freight yard and terminal of the Lake Erie & Western at Indianapolis, Ind., and is filling in the entire yard to raise the grade to the level of the Indianapolis Union tracks. The team tracks will be elevated and additional tracks will be constructed to give the yard a capacity of 240 cars. The total cost of the work will be approximately $550,000.

DULUTH & IRON RANGE.—This company has awarded a contract to Roberts & Schaefer Company, Chicago, for the construction of a 2,000-ton capacity reinforced concrete, automatic electric locomotive coaling plant at Two Harbors, Minn., to cost approximately $70,000.

ILLINOIS CENTRAL.—This company has awarded a contract to the Drumm Construction Company, Chicago, for the construction of a brick suburban passenger station at Seventy-ninth street, Chicago, as reported in the *Railway Age* of February 17. A contract has also been awarded to the Drumm Construction Company for the widening of Eleventh street, Chicago, in front of the Twelfth street passenger station. This company will construct a 300-ton coal chute at Dubuque, Iowa, and will construct with company forces passing tracks totaling approximately 12,000 ft.

in length at Martwick and McHenry, Ky., and Hanson and Binney, Ill. This company has authorized the construction of a second main track, 12,000 ft. long at Clinton, Ill. A spur track, 4,000 ft. long, will be constructed at Irwm, Ill. Bids were closed on March 27 for the construction of three subways in Chicago as a part of the Markham yard construction.

ILLINOIS CENTRAL.—This company has awarded a contract to the Railway Water & Coal Handling Company, Chicago, for the laying of pipe lines at Dunlap, Iowa, and Mt. Pulaski, Ill.

KETTLE VALLEY.—This company will construct a new passenger station at Oliver, B. C., and a new stores building and coal handling plant at Penticton, B. C.

MAINE CENTRAL.—The annual report of this company under the heading "Portland Terminal Company" says: "Plans have been completed and contracts are about to be arranged for the construction at Rigby, South Portland, of a modern locomotive terminal, including roundhouse with capacity for 40 locomotives and facilities for running repairs of locomotives, together with the necessary accessories. Plans also provide for a large interchange and classification freight yard for the more prompt and economical dispatch of through freight business. It is expected that these facilities will be completed and available for use December 1, 1923."

MONTANA RAILROAD.—This company, which is known by this name in Montana, and as the Wyoming North & South Railroad in Wyoming, of which J. M. Haskell, 347 Madison avenue, New York City, is the president, and George M. Huss, Sheridan, Wyo., is the chief engineer, will construct a line 320 miles long from Miles City, Mont., via the Tongue river to Sheridan, Wyo., thence to Buffalo, Wyo., and to the Salt Creek oil fields. Connections will be made with the Chicago, Burlington & Quincy and the Chicago & North Western near Bucknum, Wyo. Contracts for the grading have been let to Roberts Bros., Peterson, Shirley & Gunther, of Omaha, Neb., as have the contracts for track laying and the construction of bridges. The grading will average 30,000 yd. per mile, the northbound maximum grade will be 0.8 per cent, and the southbound maximum one per cent. Some bridges will be of steel construction but most will be of timber. There will be one tunnel 700 ft. in length. The road will carry oil, coal and agricultural products.

PACIFIC FRUIT EXPRESS.—This company plans the construction of an addition to the ice manufacturing plant at Roseville, Cal., to cost approximately $150,000.

PENNSYLVANIA.—This company will receive bids up to April 10 for furnishing all labor, tools, and materials and performing all the work necessary to complete a proposed crossing over the Pennsylvania Railroad, Pittsburgh Terminal division, Millvale, Pa. The approximate quantities involved are: 7,800 cu. yd. excavation; 5,900 cu. yd. foundation masonry; 5,700 cu. yd. abutment and wall masonry; 1,220 cu. yd. reinforced concrete masonry; 1,451 lin. ft. furnishing I-beams including anchors, triangular mesh, in place; and 65,000 lb. reinforcing steel in place. The work will be in charge of George Nauman, assistant to chief engineer, Pittsburgh, Pa.

ST. LOUIS-SAN FRANCISCO.—This company is receiving bids for the construction of a new passenger station at Altamont, Kan.

SAN ANTONIO SOUTHERN.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension of its present line from Christine to Brownsville, Texas, 250 miles.

TEXAS, PANHANDLE & GULF.—For four years Col. C. H. Powell, of Chicago, and associates, have been promoting the construction of a railroad between Seymour and Tucumcari, N. M., 303 miles. The Texas, Panhandle & Gulf Railroad Company has been organized to carry out the plans. The route for the proposed road has been surveyed by Wallace & Noonan, consulting engineers, Chicago, and the right of way for most of the distance has been obtained. The line will traverse a wide scope of North and West Texas, which is now lacking in railroad transportation facilities. It will pass through the towns of Truscott, Paducah, Tulia, Nazareth, Dimmitt, thence into New Mexico via Parmerton or Clovis. It is stated that the cost of constructing the proposed road will be approximately $11,000,000. This will be partly met by large donations of land along the route.

Railway Financial News

ATCHISON, TOPEKA & SANTA FE.—*Asks Authority to Acquire Control.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Dodge City & Cimarron Valley under lease.

BOSTON & MAINE.—*Application for Merger Dismissed.*—The Interstate Commerce Commission has dismissed this company's application for authority to acquire by merger the properties and franchises of the York Harbor & Beach, Sullivan County, Vermont Valley, Barre & Chelsea, Montpelier & Wells River, and Portsmouth Bridge, on the ground that this would amount to a consolidation and that the commission has no power to authorize such a consolidation pending the formulation of a general plan.

CANADIAN PACIFIC.—*Annual Report.*—This company's annual report for 1922 is reviewed in an article on another page of this issue entitled "Heavy Grain Traffic Assists C. P. R. Net." See also excerpts from annual report on adjacent pages.

CHICAGO, NORTH SHORE & MILWAUKEE.—*Notes Offered.*—Halsey, Stuart & Co. and the National City Company are offering a new issue of $1,000,000 three-year 6½ per cent secured sinking fund gold notes at par. The notes, dated April 2, 1923, mature April 1, 1926, and are redeemable at 101 to April 1, 1924; on and after April 1, 1924, to April 1, 1925, at 100½ per cent; and on and after April 1, 1925, at 100.

CHICAGO, ROCK ISLAND & PACIFIC.—*Income Statement for 1922.* The Chicago, Rock Island & Pacific under date of March 21 sent to its stockholders a four-page leaflet intended as a preliminary statement of operations in 1922. The leaflet includes a brief analysis of conditions met in 1922 and shows the income account, profit and loss account and general balance sheet. The report shows a surplus after preferred dividends of $718,044, equivalent to $0.96 on the common stock as compared with a surplus in 1921 of $2,212,564 or $2.95. A selection of the important figures in the income statement follows:

Rock Island Lines	1922	1921	Increase or decrease, amount
Operating Revenues:			
Freight revenue	$87,718,340	$99,000,440	—$11,282,101
Passenger revenue	27,650,134	30,579,092	—2,928,959
Total railway operating revenue	$125,086,233	$139,272,024	—$14,185,791
Operating Expenses:			
Maintenance of way and structures	$15,701,142	$20,790,435	—$5,089,293
Maintenance of equipment	26,103,922	28,582,510	—2,478,588
Traffic	2,299,232	2,238,114	61,118
Transportation	52,871,908	57,637,630	—4,765,722
General	2,984,821	3,095,134	—110,312
Total railway operating expenses	$100,570,926	$112,953,057	—$12,382,131
Net revenue from railway operations	$24,515,307	$26,318,967	—$1,803,659
Railway tax accruals	6,163,176	5,663,722	$499,453
Total railway operating income	$18,330,344	$20,634,009	—$2,303,666
Total other income	$1,765,540	$2,417,822	—$652,281
Total income	$20,095,884	$23,051,831	—$2,955,947
Total deductions	$15,810,506	$17,271,572	—$1,461,067
Balance of income (available for dividends)	$4,285,379	$5,780,259	—$1,494,880
Dividends:			
7% preferred	$2,059,547	$2,059,547	.....
6% preferred	1,507,788	1,508,148	—$360
Total dividends	$3,567,335	$3,567,695	—$360
Balance surplus (carried to profit and loss)	$718,044	$2,212,564	—$1,494,521
Per cent on common stock	.96	2.95	—1.99

CHICAGO & ALTON.—*To pay 3 Per Cent Bond Interest.*—The protective committee for the 3 per cent refunding 50-year gold bonds has announced that the receivers have been ordered by the court to pay the interest on the bonds, which became due October 1, 1922, plus interest thereon at 6 per cent. The receivers are allowed until April 1 to make this payment.

Depositors are directed to present their certificates to the New York Trust Company, or to the Illinois Trust and Savings Bank

of Chicago, sub-depositary. Upon such deposit, depositors who have not received an advance of the October 1 interest will receive such interest with interest thereon at 6 per cent to date of payment by the receivers; those who have already received an advance will be credited with the repayment thereof and in addition will receive interest at 6 per cent on the amount of the October 1, 1922, interest from that date to February 20 last.

As the company is about to default in payment of the April 1 interest, the announcement explains, any depositor who so requests may at any time on or after April 1 receive an advance of the April 1 interest. The committee has also extended to May 1 the time for the deposit of bonds.

DENVER & RIO GRANDE WESTERN.—*Asks Authority for Equipment Trust.*—The receiver has applied to the Interstate Commerce Commission for authority to assume liability in connection with $4,500,000 of 5½ per cent equipment trust certificates.

DODGE CITY & CIMARRON VALLEY.—*Acquisition of Control.*—See Atchison, Topeka & Santa Fe.

ERIE.—*Asks Authority for Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority to guarantee the payment of $900,000 of equipment trust certificates.

GULF, COLORADO & SANTA FE.—Dr. Arthur T. Hadley, of New Haven, has been elected a director to succeed T. De Witt Cuyler, deceased.

MISSOURI-KANSAS-TEXAS.—*Securities Ready.*—The reorganization managers, J. W. Seligman & Co. and Hallgarten & Co., have announced that the securities of the new company are now ready for delivery.

To Pay Interest.—The directors of the Missouri-Kansas-Texas have authorized the payment on April 2 of interest for the year ended December 31, 1922, at the rate of 5 per cent per annum on the series A adjustment mortgage bonds.

NEW YORK, LACKAWANNA & WESTERN.—*Bonds Offered.*—J. P. Morgan & Co. are offering at 96¼ to yield 4.70 per cent a new issue of $10,000,000 4½ per cent first and refunding mortgage bonds. The issue is dated May 1, 1923, and is due May 1, 1973. It is secured by a first mortgage on half of the Delaware, Lackawanna & Western's main line and is guaranteed by that road. The proceeds of the issue will provide funds for the payment and cancellation of bonds, due in May and in August, 1923.

PENNSYLVANIA.—*To Consider Lease.*—The stockholders, at the annual meeting on April 10, will be asked to approve a long term lease of the property of the Pennsylvania-Detroit Railroad. The latter is a subsidiary corporation through which the lines of the Pennsylvania System reach Detroit, in connection with the use of portions of the facilities of the Ann Arbor, Pere Marquette and Wabash Railroads.

PERE MARQUETTE.—*Annual Statement for 1922.*—A preliminary income statement of the operations of the Pere Marquette for 1922 shows a surplus of $4,350,560, an increase of $584,680 over 1921. The income account follows:

	1922	1921	Increase or decrease
Operating revenues	$38,397,933	$38,303,029	$94,904
Operating expenses	28,911,265	30,036,300	—1,125,036
Net operating revenue	9,486,669	8,266,729	1,219,939
Non-operating income	623,396	690,654	—67,258
Gross income	10,110,064	8,957,383	1,152,681
Taxes	1,791,795	1,408,481	383,315
Miscellaneous income charges	3,298	3,827	—529
Uncollectible railway revenues	12,796	4,696	8,100
Hire of equipment—debit	1,010,407	550,382	460,025
Rentals	797,459	839,771	—42,313
Total charges excluding interest	3,615,755	2,807,156	808,599
Balance before deduction of interest	6,494,309	6,150,226	344,083
Interest on bonds	1,612,852	1,687,754	—74,902
Interest on equipment notes	526,310	639,030	—112,721
Interest on bills payable, etc.	4,587	57,562	—52,975
Total interest accruals	2,143,748	2,384,346	—240,598
Surplus	4,350,560	3,765,880	584,680
Ratio of operating expenses to operating revenues	75.29	78.42	—3.13
Ratio of taxes to operating revenues	4.67	3.67	1.00
Total	79.96	82.09	—2.13

PITTSBURGH & WEST VIRGINIA.—*Asks Injunction Against Commission.*—This company and the West Side Belt have filed a suit in the supreme court of the District of Columbia for an injunction against the Interstate Commerce Commission and the attorney general of the United States to prevent the enforcement of penalties provided by the transportation act should they carry out an agreement to consolidate under state laws. The Interstate Commerce Commission recently denied an application of the companies for authority to effect the merger.

PORT ARTHUR CANAL & DOCK COMPANY.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $2,000,000 of bonds to be guaranteed by the Kansas City Southern and Texarkana & Fort Smith, the proceeds to be used to pay off $1,000,000 of maturing bonds and for additions and betterments.

SAN ANTONIO, UVALDE & GULF.—*Purchase Planned.*—See Sugar Land Railroad.

SAVANNAH & SOUTHERN.—*Sold.*—This railway, which operates between Lanier, Ga., and Glennville, 32 miles, was sold at receiver's sale on March 17 to G. T. Tuten for $50,001. Mr. Tuten is vice-president of the Savannah & Southern with headquarters at Letford, Ga.

SEABOARD AIR LINE.—*Asks Authority for Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority to issue $6,600,000 of 6 per cent equipment trust certificates to be sold at 95½.

SHERMAN, SHREVEPORT & SOUTHERN.—*Operation of Line Authorized.*—The Interstate Commerce Commission has issued a certificate authorizing the operation by William Edenborn and by the Louisiana Railway & Navigation Company of Texas, when organized, of the Sherman, Shreveport & Southern.

SUGAR LAND RAILROAD.—*Purchase of San Antonio, Uvalde & Gulf.*—W. C. Eldridge, president of the Sugar Land Railroad, has announced that he will exercise an option to purchase the San Antonio, Uvalde & Gulf when it is released from the present receivership. Plans are under consideration to build a branch of the road from Fowlerton, Tex., to a point in the lower Rio Grande valley.

TEXAS & PACIFIC.—New Directors.—Oren Root, president of the Hudson & Manhattan Railroad, and Matthew C. Brush, president of the American International Corporation, have been elected directors.

WEST JERSEY & SEASHORE.—*Dividend Declared.*—This company has declared a dividend of 2 per cent out of earnings of 1922, payable April 16 to stock of record April 6. This is the first dividend since September, 1920. The company formerly paid 5 per cent annually.

WISCONSIN CENTRAL.—*Acquisition of Control Authorized.*—The Interstate Commerce Commission has approved and authorized the acquisition by this company of control of part of the line of the Stanley, Merrill & Phillips by lease, and also the acquisition of control by the Minneapolis, St. Paul & Sault Ste. Marie under the terms of its lease of the Wisconsin Central.

YAZOO & MISSISSIPPI VALLEY.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $1,058,000 of 5 per cent gold improvement bonds to reimburse the treasury for expenditures.

Dividends Declared

Boston & Providence.—2½ per cent, quarterly, payable March 31 to holders of record March 15.

Northern Railroad of New Hampshire.—1½ per cent, quarterly, payable April 2 to holders of record March 12.

Norwich & Worcester.—Preferred, 2 per cent, quarterly, payable April 1 to holders of record March 15.

Philadelphia & Western.—Preferred, 1¼ per cent, quarterly, payable April 14 to holders of record March 31.

Providence & Worcester.—2½ per cent, quarterly, payable March 31 to holders of record March 14.

Reading Company.—Common, 2 per cent, quarterly, payable May 10 to holders of record April 17.

West Jersey & Seashore.—2 per cent, payable April 16 to holders of record April 6.

Trend of Railway Stock and Bond Prices

	Mar. 27	Last Week	Last Year
Average price of 20 representative railway stocks	67.28	69.06	60.60
Average price of 20 representative railway bonds	82.06	82.84	83.19

Annual Report

Canadian Pacific Railway Company

FORTY-SECOND ANNUAL REPORT
OF THE
DIRECTORS OF THE CANADIAN PACIFIC RAILWAY COMPANY, YEAR ENDED DECEMBER 31ST, 1922

To the Shareholders:

The accounts of the Company for the year ended December 31st, 1922, show the following results:

Gross Earnings		$186,675,035.84
Working Expenses (including all taxes)		150,373,344.83
Net Earnings		$36,301,691.01
Deduct Fixed Charges		13,348,905.66
Surplus		$22,952,785.35
Contribution to Pension Fund		500,000.00
		$22,452,785.35
From this there has been charged a half-yearly dividend on Preference Stock of 2 per cent., paid September 30th, 1922	$1,613,638.42	
And three quarterly dividends on Ordinary Stock of 1¾ per cent. each, paid June 30th, 1922, September 30th, 1922, and December 30th, 1922	13,650,000.00	
		15,263,638.42
		$7,189,146.93
From this there has been declared a second half-yearly dividend on Preference Stock of 2 per cent. payable March 31st, 1923.	$1,613,638.42	
And a fourth quarterly dividend on Ordinary Stock of 1¾ per cent., payable March 31st, 1923	4,550,000.00	
		6,163,638.42
Leaving net surplus for the year		$1,025,508.51

In addition to the above dividends on Ordinary Stock, three per cent. was paid from Special Income.

SPECIAL INCOME FOR THE YEAR ENDED DECEMBER 31st, 1922

Balance at December 31st, 1921	$23,717,491.20	
Less: Dividend paid April 1st, 1922	1,950,000.00	
		$21,767,491.20
Net Revenue from Investments and Available Resources, Exhibit "C"		2,694,979.09
Interest on Deposits, and Interest and Dividends on Other Securities		1,957,190.26
Net Earnings Ocean and Coastal Steamship Lines		3,448,293.48
Net Earnings Commercial Telegraph and News Department, Hotels, Rentals and Miscellaneous		2,991,892.30
		$32,859,846.33
Less: Payments to Shareholders in dividends: June 30th, 1922, September 30th, 1922, and December 30th, 1922		5,850,000,00
		$27,009,846.33
From this a dividend has been declared payable March 31st, 1923		$1,950,000.00

2. The working expenses for the year, including all taxes, amount to 80.55 per cent. of the gross earnings, and the net earnings to 19.45 per cent., as compared with 82.28 per cent. and 17.72 per cent., respectively, in 1921.

3. The gross earnings of your transportation system during the past fiscal year were less than those of 1921 by $6,346,818, but the net earnings increased by $2,099,950. The net surplus over that of 1921 increased by $270,117, the difference between the increases in net earnings and net surplus being due to the increase in fixed charges owing to the sale of Consolidated Debenture Stock. The decrease in gross earnings, as indicated by the monthly operating results, continue for the first nine months of the year due to general business depression, which reflected itself very markedly in both freight and passenger revenues. Beginning with October and in consequence of the very bountiful crops in Canada, both East and West, and notwithstanding the drastic reduction in rates on grain to Fort William under what is known as the "Crow's Nest Agreement," the revenues improved to such an extent that a decrease in gross earnings on September 30th of $11,560,856 was reduced during the last three months by $5,214,000. The working expenses were by economical administration reduced by $8,446,769 during the year. In view of the conditions which prevailed during the first nine months of the year, your Directors cannot but regard the result of the operations as satisfactory. They feel, too, that short of some calamity or grave economic disturbance which cannot be foreseen, the worst of the after-war depression has passed, and that more stable and favorable commercial conditions should exist from now on, with the consequent improvement in traffic and revenues.

4. The sales of agricultural land in the year were 107,503 acres for $1,732,742.43, being an average of $16.12 per acre. Included in this area were 2,440 acres of irrigated land, which brought $61.73 per acre, so that the average price for the balance was $15.06 per acre. The sales of land during the year were disappointingly small due to the depression in Western Canada. The conditions were, however, general and combined with small immigration resulted in little new settlement and the lowest number of farm-land transactions in any year during the last ten years.

5. The Canadian Pacific Steamships, in common with all other ocean lines, have in 1922 passed through a trying period. The large amount of ocean tonnage which the owners have endeavored to keep in commission has naturally created a situation seriously affecting revenues from transportation, both as to freight and passengers. In addition to the steamship lines of private companies, a large Government-owned tonnage has been in active competition with the old-established lines on all oceans. The competition of the United States lines especially has been of a demoralizing nature; in some cases lower freight rates were established than shippers represented as necessary and willing to accept. The Atlantic service, however, shows a gratifying comparison with that of the previous year. During 1921 your ships performed 136 round voyages, and in 1922, 188—an increase of 52 voyages. There was a shrinkage in gross earnings of $2,502,000, but there was a decrease in operating expenses of $2,736,000, thereby increasing net profits $234,000. In other words, the average cost of operation per voyage in 1921 was $143,000, and in 1922, $89,000, a reduction of $54,000 per voyage, or 37 per cent. although there were several larger ships in commission during the past year.

Notwithstanding this heavy decrease in operating expenses, the furnishings, equipment and victualling of your passenger steamers have been maintained at the highest possible standard. The efficiency of the service and the discipline and morale of the ships' crews were never better, and their popularity with the traveling public is everything that can be desired.

Your Pacific service during the past year has undergone considerable changes. The fine new steamers "Empress of Canada" and "Empress of Australia," have taken the place of the "Empress of Japan" and the "Monteagle," and the Company is now operating four of the finest, best equipped and fastest steamers on the Pacific. Unfortunately, however, the Pacific trade during the past year has been of a disappointing character. China has been almost continuously in a state of civil war, and in those sections where actual war conditions have not prevailed, strikes and other disturbing features have paralyzed trade and commerce, materially affecting passenger travel, both business and tourist. The most severe competition ever met on the Pacific has been experienced. The United States Merchant Marine are operating ten passenger and cargo ships from San Francisco and Puget Sound ports which are the largest and most expensive merchant ships built in the United States.

Your Directors feel, however, that you may look forward to the present year showing better results. Special efforts are being made to encourage through travel between the Orient and Europe, and the summer schedules will enable a passenger to travel from Japan to England or France, a distance of about 10,000 miles, in twenty-one days, which should prove advantageous to your line in competition with the Suez route.

6. During the year your Directors sold in London £3,087,007, and in New York $2,000,000 of Four per cent. Consolidated Debenture Stock, the issue of which you had previously authorized.

The market for your Company's securities both in New York and London continues active and favorable.

7. During the year your Directors consented to the issue of $2,500,000 First Refunding Mortgage Six per cent. Bonds of the Minneapolis, St. Paul and Sault Ste. Marie Railway Company, and also approved the obtaining of a similar amount on Short Term Notes by that Company and an extension of $3,000,000 One-Year Notes maturing in June, 1922. Your Company assumed no direct responsibility in connection with either of these issues.

The improvement in the revenues of the Minneapolis, St. Paul and Sault Ste. Marie Railway System during the last fiscal year was very marked, its net operating revenues for the year being $7,178,971.82 as against a loss of $696,584.13 for the previous year. In the opinion of the Directors of the "Soo" Company, this improvement should continue and its financial position be materially strengthened.

8. In anticipation of your confirmation, your Directors authorized capital appropriations in addition to those approved at the last annual meeting, aggregating for the year 1922, $1,512,680. Your approval is asked to expenditures on capital account during the present year, as and when the conditions warrant such expenditures, of $7,630,100. Of this amount the principal items are:

Replacement and enlargement of structures in permanent form	$803,700
Additional stations, round houses, freight sheds and shops, and extensions to existing buildings	318,400
Tie plates, rail anchors, ballasting, ditching and miscellaneous roadway betterments	1,250,400
Replacement of rail in main and branch line tracks with heavier section	169,500
Additional terminal and side track accommodation	502,500
Extension work on Chateau Frontenac Hotel, Quebec, including new equipment	2,800,000
Bungalow Camps in Ontario	90,000
Additional lining, Connaught Tunnel	695,000
Mechanical Department, machinery at various points	78,700
Improvements in connection with Telegraph service	39,100

The balance of the amount is required for miscellaneous works to improve facilities and effect economies over the whole System.

9. Your Directors are of the view that reasonable extensions of your branch line mileage in Alberta and Saskatchewan, in addition to the lines which you have already authorized, are desirable, and your authority will be asked for proceeding with the construction of the following lines and for the issue and sale of a sufficient amount of Four per cent. Consolidated Debenture Stock to meet the expenditure, namely:

Kipp to Bow River	22 miles
Archive-Wymark Branch, Mileage 25 to 50	25 miles
Tuffnell-Prince Albert Branch	50 miles

10. Your Directors are making provision with your approval for obtaining the following necessary additions to your Company's equipment:

6 Steel Café Parlor cars,
6 Buffet-Parlor cars,
12 Steel Sleeping cars,
15 Steel First Class coaches,
12 Steel Mail and Express cars,
15 Steel Colonist cars,
300 75-ton Coal cars,
300 41-foot Flat cars,
1000 Box cars,
300 Automobile cars,
50 Oil Tanks,
36 Locomotives,

at a total cost of $12,295,000.

11. As provision has been made for the retirement of the Note-Certificates of the Company issued in 1914 for $52,000,000 and maturing on March 2nd, 1924, your Directors are arranging that these Note-Certificates

shall be paid off in July of this year, and notice in accordance with the provisions of the agreement establishing the Special Investment Fund will be given by the Trustee.

12. The Death occurred on the 17th of September last of Mr. Richard B. Angus in the ninety-second year of his age. The late Mr. Angus was a constituted member of the first Board of Directors by the Parliamentary Act incorporating the Company in the year 1881, and was continuously during the succeeding forty-one years a Director of the Company and a member of the Executive Committee of the Board. His constant devotion to the Company's interests, his sound judgment and wise counsel which were at all times of the greatest assistance in the determination of the Company's policies and in the administration of its affairs and his close personal relations with the members of the Board made his passing of particularly poignant regret. Your Directors desire to record their sense of the great loss sustained by the Company and by the Country through his decease.

The vacancy caused by Mr. Angus' death has not yet been filled.

13. Mr. W. N. Tilley, K.C., of Toronto, Consulting Counsel of the Company, was elected a Director to fill the vacancy caused by the death of Sir John Eaton.

14. The undermentioned Directors will retire from office at the approaching Annual Meeting. They are eligible for re-election:

SIR EDMUND B. OSLER,
SIR HERBERT S. HOLT,
COLONEL FRANK S. MEIGHEN, C.M.G.

For the Directors,

E. W. BEATTY, *President.*

Montreal, March 12th, 1923.

ASSETS

Property Investment:		
Railway, Rolling Stock Equipment and Lake and River Steamers		$605,989,405.89
Ocean and Coastal Steamships, Exhibit "A"		59,787,250.24
Acquired Securities (Cost):		
Exhibit "B"		128,172,166.18
Advances to Controlled Properties and Insurance Premiums.		10,705,762.52
Investments and Available Resources:		
(Including amount held in trust for 6% Note Certificates, $61,032,439.45)		
Deferred Payments on Lands and Townsites	$65,681,508.67	
Imperial and Dominion Government Securities	20,681,588.33	
Provincial and Municipal Securities	792,721.29	
Debenture Stock in Treasury	5,000,000.00	
Miscellaneous Investments, Exhibit "C," Cost	42,924,970.08	
Assets in Lands and Properties, Exhibit "D"	94,056,449.95	
Cash	9,452,380.88	
		238,589,619.20
Working Assets:		
Material and Supplies on Hand	$28,723,731.05	
Agents' and Conductors' Balances	3,442,368.53	
Net Traffic Balances	1,558,528.49	
Imperial, Dominion and United States Governments, Accounts due for Transportation, etc.	1,898,427.66	
Miscellaneous Accounts Receivable	7,429,996.95	
Cash in Hand	41,143,893.42	
		84,196,946.10
		$1,127,441,150.13

LIABILITIES

Capital Stock:		
Ordinary Stock	$260,000,000.00	
Four per cent. Preference Stock	80,681,921.12	
		$340,681,921.12
Four per cent. Consolidated Debenture Stock		253,229,865.74
Mortgage Bonds:		
Algoma Branch 1st Mortgage 5 per cent		3,650,000.00
Note Certificates 6 per cent		52,000,000.00
Current:		
Audited Vouchers	$8,249,900.73	
Pay Rolls	3,679,336.15	
Miscellaneous Accounts Payable	10,798,601.95	
		22,727,838.83
Accrued:		
Rentals of Leased Lines and Coupons on Mortgage Bonds		688,446.76
Equipment Obligations		14,670,000.00
Reserves and Appropriations:		
Equipment Replacement	$14,325,081.71	
Steamship Replacement	16,564,794.89	
Reserve Fund for Contingencies and Contingent Taxes	37,168,922.37	
		68,058,798.97
Premium on Ordinary Capital Stock Sold		45,000,000.00
Net Proceeds, Lands and Townsites		88,356,525.55
Surplus Revenue from Operation		129,506,628.36
Special Reserve to meet Taxes imposed by Dominion Government		2,462,922.04
Surplus in other Assets		106,408,202.76
		$1,127,441,150.13

J. LESLIE, *Comptroller.*

AUDITORS' CERTIFICATE.

We have examined the Books and Records of the Canadian Pacific Railway Co. for the year ending December 31st, 1922, and having compared the annexed Balance Sheet and Income Account therewith, we certify that, in our opinion, the Balance Sheet is properly drawn up so as to show the true financial position of the Company at that date, and that the relative Income Account for the year is correct.

PRICE, WATERHOUSE & CO.,
Chartered Accountants (England)

Montreal, March 10th, 1923.

[ADVERTISEMENT]

Railway Officers

Executive

N. D. Ballantine, superintendent of transportation of the Union Pacific, has been appointed assistant to the president of the Seaboard Air Line with headquarters at Baltimore, Md.

A. E. Clift, general manager of the Illinois Central with headquarters at Chicago has been elected vice-president in charge of operation with the same headquarters, succeeding L. W. Baldwin who has resigned, as noted on another page. Mr. Clift was born on October 15, 1869, at Urbana, Ill. He entered railway service as a call boy on the Illinois Central at Champaign, Ill., and on December 5, 1888, became a freight brakeman for the same company. He was promoted to conductor on April 8, 1892. He was appointed engine foreman of the Champaign district of the Illinois Central on February 19, 1893, and held this position for less than a month, when he was promoted to yardmaster. He became a conductor on the Chicago district in December, 1894, and became passenger conductor on the same district in August, 1901. He was promoted to acting trainmaster of the Chicago district, with headquarters at Kankakee, Ill., on October 14, 1902, which position he held until February 3, 1903, when he was promoted to trainmaster. He was promoted to superintendent of the Freeport division, with headquarters at Freeport, Ill., on February 22, 1905, and served in this capacity until January 15, 1907, when he was transferred to the St. Louis division, with headquarters at Carbondale, Ill. He was promoted to general superintendent of the Southern lines, with headquarters at New Orleans, La., on June 1, 1910, which position he held until May 10, 1912, when he was transferred to the Northern and Western lines, with headquarters at Chicago. On August 1, 1917, he was promoted to general manager, with headquarters at Chicago, in which position he was serving at the time of his recent advancement.

A. E. Clift

Operating

G. W. Marriott has been appointed inspector of passenger transportation of the Missouri Pacific with headquarters at St. Louis, Mo.

J. C. Roth, director of the Bureau of Service of the Interstate Commerce Commission with headquarters at Washington, D. C., has been appointed general superintendent of transportation of the Great Northern with headquarters at St. Paul, Minn. **A. L. Bergfeld,** who has been acting as general superintendent of transportation with headquarters at St. Paul, has been appointed superintendent of transportation with the same headquarters.

N. L. Howard, general superintendent of the Missouri district of the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo., has been granted an extended leave of absence. **C. D. Peckenpaugh,** division superintendent, with headquarters at Aurora, Ill., has been promoted to acting general superintendent of the Missouri district, with headquarters at St. Louis, Mo., succeeding Mr. Howard. **H. D. Brown,** superintendent of transportation, with headquarters

at Chicago, has been promoted to acting division superintendent, with headquarters at Aurora, Ill., succeeding Mr. Peckenpaugh.

G. R. Barry, whose promotion to division superintendent of the Richmond division of the Pennsylvania, with headquarters at Richmond, Ind., was reported in the *Railway Age* of March 3, was born at Hillsboro, Ill. He was educated at the University of Illinois and entered railway service in June, 1899, as a track apprentice on the Illinois Central. He entered the service of the Pennsylvania, Lines West of Pittsburgh, as a rodman in February, 1900, serving in this capacity until January, 1906, when he was promoted to assistant division engineer. He was promoted to division engineer on February 1, 1912, and held this position until March 1, 1920, when he was promoted to division superintendent. On account of the consolidation of divisions, he was again appointed division engineer in March, 1921, with headquarters at Logansport, Ind. He was serving in this capacity on March 1, 1923, when he was promoted to superintendent of the Richmond division, with headquarters at Richmond, Ind.

G. R. Barry

Charles F. Needham, whose appointment as assistant to the general manager of the Canadian National with headquarters at Toronto, was announced in the *Railway Age* of March 10, page 593, was born at London, Ont., on December 9, 1877. He was educated in the public schools and collegiate institute of that city and entered railway service in July, 1898, with the Grand Trunk. Mr. Needham held the positions of stenographer, head timekeeper, accountant, chief clerk, special assistant to the vice-president in charge of the motive power and car departments, assistant fo the general superintendent of the motive power and car departments and as acting assistant to the operating manager. His early experience was in the maintenance of way department. He served for seven years in a divisional motive power department office and fourteen years in the system motive power department office. He then served for a brief period in the operating department and returned again to the motive power department. At the time of his appointment as assistant to the general manager of the Canadian National, Mr. Needham was serving as assistant to the general superintendent of the motive power and car departments of the Grand Trunk at Montreal.

C. F. Needham

J. J. Pelley, general superintendent of the Illinois Central, with headquarters at Chicago, and chairman of the Chicago car service committee of the American Railway Association, has been promoted to general manager of the Illinois Central, with the same headquarters, succeeding A. E. Clift, who has been elected vice-president in charge of operation. **G. E. Patterson,** acting general superintendent of the Northern lines, with headquarters at Chicago, has been promoted to general superintendent, Northern lines, with the same headquarters, succeeding Mr. Pelley. **J. M. Egan,** general superintendent of the Southern lines, with headquarters at New Orleans, La., has been appointed chairman of the Chicago car service committee of the American Railway Association, with headquarters at Chicago, succeeding Mr. Pelley. **W. Atwill,** division superintendent, with headquarters at Carbondale, Ill., has been promoted to general superintendent of the Southern lines, with headquarters at New Orleans, La., succeeding Mr. Egan. **J. W. Hevron,** division superintendent, with headquarters at Champaign, Ill., has been transferred to headquarters at Carbondale, Ill., succeeding Mr. Atwill. **F. R. Mays,** division superintendent, with headquarters at Vicksburg, Miss., has been transferred to headquarters at Champaign, Ill., succeeding Mr. Hevron. **J. F. Walker,** master mechanic, with headquarters at Paducah, Ky., has been promoted to division superintendent, with headquarters at Vicksburg, Miss., succeeding Mr. Mays. **C. M. Starke,** master mechanic, with headquarters at Centralia, Ill., has been transferred to headquarters at Paducah, Ky., succeeding Mr. Walker.

Walter Pratt, whose appointment as general manager of sleeping, dining and parlor cars and station restaurants of the Canadian National was announced in the *Railway Age* of March 10, page 592, was born on January 18, 1870, at Sibbertoft, Nottinghamshire, England. He entered railway service in 1883 as a junior clerk in the audit office of the Canadian Pacific at Winnipeg. Three years later he became chief clerk of the purchasing department of the same road. He then served as secretary to the supervising engineer of the construction department, pay-roll clerk in the stores department and cashier in the treasury department. In 1890 he became an accountant in the sleeping and dining car department and four years later was appointed sleeping and dining car agent of the company's western division. In 1898 he was appointed superintendent of sleeping and dining cars in the hotel department of the western lines. In 1903 he went with the Canadian Northern in the same capacity. Eight years later he was appointed general superintendent of sleeping and dining cars, hotels and the news department, with headquarters at Winnipeg. In January, 1919, he was appointed manager of these departments for the Canadian National.

Walter Pratt

Traffic

George H. Eaton has been appointed freight traffic manager of the Maine Central with headquarters at Portland, Me., effective April 1. The office of general freight agent has been abolished.

C. J. Rohwitz has been appointed general passenger agent of the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo., succeeding W. A. Lalor, whose retirement on account of ill health was reported in the *Railway Age* of March 10.

C. H. Morrill, assistant to vice-president in charge of traffic of the St. Louis-San Francisco with headquarters at St. Louis, Mo., has been promoted to assistant freight traffic manager with the same headquarters. **H. F. Sanborn,** general agent, freight department, at Kansas City, Mo., has been promoted to assistant to vice-president in charge of traffic, succeeding Mr. Morrill. **G. F. MacGregor,** general freight agent with

headquarters at St. Louis, has been appointed executive general agent with headquarters at Kansas City, succeeding Mr. Sanborn. **R. N. Nash,** assistant general freight agent with headquarters at St. Louis, has been promoted to general freight agent with the same headquarters, succeeding Mr. MacGregor. **L. P. Nash** has been appointed assistant general freight agent with headquarters at St. Louis, succeeding R. N. Nash.

Walter Maughan has been appointed steamship passenger manager of the Canadian Pacific. He was born in Toronto on September 4, 1876, and was educated at the Toronto Academy for Boys and at the Upper Canada College at Toronto. He entered railway service on March 1, 1892, as a clerk in the ticket office of the Canadian Pacific at Toronto. Shortly thereafter he went to Hamilton, Ont., in the same capacity and returned to Toronto in 1895. In 1897 he was appointed city passenger agent at Toronto and in February, 1913, district passenger agent. In December of the same year he was promoted to assistant general passenger agent. In 1922 he was advanced to assistant to the general passenger traffic manager and served in that capacity until the time of his recent promotion. Mr. Maughan was chairman of the demobilization committee of the Canadian Railway War Board, representing the Minister of Militia, and was commissioned a lieutenant-colonel in recognition of his work in transporting troops from China and Canada to France.

W. Maughan

Mechanical

J. W. Senger, master car builder on the New York Central, with headquarters at Collinwood, Ohio, has been promoted to superintendent of rolling stock of the Lines West of Buffalo, with headquarters at Cleveland, Ohio.

Wm. E. Barnes, whose appointment as superintendent of motive power of the Canadian National with headquarters at Moncton, N. B., was announced in the *Railway Age* of March 10, page 593, was born at Shediac, N. B., on July 24, 1879. He entered railway service in 1899 as a machinist's apprentice at Moncton. Three years later he was promoted to draftsman. For a short time in 1906 he served as a machinist and then again as draftsman. In 1907 he became a fitter and two years later was again transferred to the drafting room. In 1910 he was appointed enginehouse inspector; a year later as acting master mechanic. In 1912 he was promoted to master mechanic. In 1917-1918 he served as general master mechanic on the Lines East of Mont Joli. From that time until his appointment as superintendent of motive power he served as master mechanic at Moncton, N. B., at which point he has been stationed throughout his entire railway service with the single exception above noted.

Engineering, Maintenance of Way and Signaling

C. S. Gzowski, whose appointment as chief engineer of the construction department of the Canadian National was announced in the *Railway Age* of March 10, page 593, was born in Toronto on May 1, 1876. He was educated at Bishop Ridley's College, St. Catherines, Ont., which institution he attended from 1890 to 1894, and at the School of Practical Science of the University of Toronto, which he attended from 1894 to 1897. During the summers of 1895, 1896 and 1897 he worked in the engineering department of various railroads. From 1897 to 1905 he was engaged in railway location and construction for the Canadian Pacific and other roads in Ontario and the western provinces. During the latter part of this period he was in charge of construction work. In 1905-1906 he was in the service of Loss & Macdonnell, the builders of the Nicola, Kamloops and Similkameem branch of the Canadian Pacific from Spence's Bridge, B. C. In 1906 he formed a partnership under the name of Macdonnell, Gzowski & Company, with headquarters at Vancouver, B. C. A branch of this concern was established at Spokane, Wash., under the name of G. O. Foss & Company. Under these firms he was in charge of a considerable mileage of railway construction in British Columbia, Montana, Idaho, and Washington; among these, the spiral tunnels of the Canadian Pacific at Field, B. C. In addition to railroad work, Mr. Gzowski, with these companies, undertook other construction work including municipal improvements. In 1914 the partnership with which he was connected was dissolved and Mr. Gzowski engaged in private engineering practice until 1916 when he was appointed valuating engineer for the Royal Commission of Enquiry into Railways and Transportation. In April of the following year he again entered private practice and on December 1 was engaged by the directors of the Canadian Northern to assist in the arbitration of the value of their stock. From January, 1918, to April, 1919, he was engaged in special work for the vice-president of the Canadian Northern. He was then appointed special engineer to the vice-president of operation, maintenance and construction of the Canadian National. In October, 1920, he was appointed assistant to the vice-president of construction of the Canadian National and served in that capacity until his recent appointment as chief engineer.

Obituary

J. S. Walsh, former president of the Terminal Railroad Association of St. Louis and of the St. Louis Bridge Company, which constructed the Eads bridge at St. Louis, died in that city on March 21.

J. B. Yohe, Jr., superintendent of the Pittsburgh & Lake Erie with headquarters at Pittsburgh, Pa., died on March 25 at the Southside Hospital, Pittsburgh. Mr. Yohe was born on January 15, 1880, at Connellsville, Pa.

Robert L. Russell, vice-president in charge of traffic of the Philadelphia & Reading with headquarters at Philadelphia, died suddenly at his home at Wyncote, Pa., on March 22. Mr. Russell was born in Howard County, Maryland, on July 19, 1867. He began his railroad career in October, 1882, as a clerk for the Baltimore & Ohio at Baltimore. Subsequently, he was employed as a clerk with the Philadelphia & Reading Express Company, the Adams Express Company, the Woodruff Parlor Car Company and the Long Island. He entered the service of the Philadelphia & Reading as a clerk in the transportation department at Philadelphia in October, 1887. He was transferred to the general freight office in March, 1888, and became chief clerk of that department in June, 1891. He was promoted to freight claim agent in April, 1894, and to assistant general freight agent in June, 1907. In December, 1909, he was appointed general freight agent, and in July, 1918, he was appointed assistant freight traffic manager of the Philadelphia & Reading, the Central of New Jersey, the Staten Island Rapid Transit and the Baltimore & Ohio New York terminals. In December of the same year he was made freight traffic manager of the same roads. Upon the return of the railroads to private control on March 1, 1920, Mr. Russell was appointed freight traffic manager of the Philadelphia & Reading. In April, 1921, he was elected vice-president in charge of traffic.

R. L. Russell